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An annotated checklist of birds of Paraje Tres Cerros, Corrientes province, Argentina

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Abstract

We provide an updated checklist of birds of a unique landscape in northeastern Argentina, which is characterized by three isolated, rocky outcrops and their surrounding agroecosystem. We recorded 188 bird species, including nine that are globally or nationally threatened. We highlight the presence of several grassland-specialist birds of conservation concern. Of the species recorded, 80.6% are residents and 17.7% are migrants. The heterogeneity of the landscape and its structural complexity accounts the existence of a high avian species diversity, which includes both generalists and specialists. This study confirms the conservation value of this ecosystem, due both to the rocky outcrops and grassland matrix. Grasslands are one of the most threatened biomes in the world.

Keywords

Avian diversity, conservation, grassland, inselbergs, threatened species

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Introduction

Corrientes is among the provinces with the greatest avian richness in Argentina (Capllonch et al. 2005; Chatellenaz et al. 2010). Its high avian diversity is related to the convergence of three phytogeographic provinces (Cabrera 1971): Chaqueña, Paranaense, and Espinal. Among the most representative and threatened formations in the province are grasslands (Di Giacomo 2011). Grasslands are highly disturbed worldwide, as a large proportion of the biome has been replaced by crops or is subject to cattle grazing (Hannah et al. 1995). Until recently, the protected areas of Corrientes covered only areas of the Chaqueña and Paranaense phytogeographic provinces (i.e., Parque Nacional Mburucuyá, Parque Provincial San Cayetano, Reserva Natural Iberá, Reserva Rincón Santa María, and Reserva Natural Apipé). Recently, the Reserva Natural Privada Paraje Tres Cerros (RNPPTC) within Paraje Tres Cerros was created. It is the first private protected area of the Espinal province. The purpose of this nature reserve is to protect two of the three rocky outcrops of Paraje Tres Cerros, which are part of

a remarkable and unique landscape. Rocky outcrops, or inselbergs, are defined as geological features consisting mainly of granitic and gneissic rocks that protrude above the surface of the surrounding land (Bremer and Sander 2000). The difficulty of accessing the outcrops has hindered their exploitation. For this reason, their natural habitats are generally well preserved and may act as a refuge for wildlife, including many endemic species (Porembski and Barthlott 2000; Fredericksen et al. 2003).

Although the nature reserve protects 117 ha of rocky grasslands and forests that grows on the outcrops, the rest of the landscapes of Paraje Tres Cerros, including the surrounding grassland matrix, forest patches, marshes and the third outcrop, are unprotected. Studies of its fauna have focused on herpetology, arthropods, and bats (Cajade et al. 2013; Ojanguren-Affilastro et al. 2017; Nadal et al. 2018). However, despite the site's notable characteristics, studies on its avifauna are scarce, with the exception of a study by Fandiño et al. (2017), who studied the grasslands and forests avifauna and recorded 107 species. No study has focused more broadly on the avifauna of Paraje Tres Cerros and the grassland matrix. Species inventories are an important for a better understanding of the regional distributions of species, data which are essential for management plans and species conservation.

Our goal in this study is to report data from six years of monitoring at Paraje Tres Cerros, including both natural and anthropogenic environments. We update the previously published avifaunal inventory (Fandiño et al. 2017) and compare our data to this previous inventory. Our data fill a knowledge gap in the avifauna of the Espinal region. As Fandiño et al. (2017) did not include the grassland matrix or anthropogenic environments in their study, and because we undertook a larger sampling effort, we expected to find a greater diversity of bird species, including threatened grassland species.

Study Area

The study was carried out at Paraje Tres Cerros located in the San Martín Department, central-west Corrientes Province, northeastern Argentina (Fig. 1). Phytogeographically, Paraje Tres Cerros is within the Ñandubay District, corresponding to the Espinal Province in the Chaco Domain (Cabrera 1971). The topography of the site presents three rocky outcrops or inselbergs (Fig. 2): Cerro Capará (158 m above mean sea level [a.s.l.], 29°10′S, 056°52′W), Cerro Chico (148 m a.s.l., 29°07′S, 056°56′W), and Cerro Nazareno (179 m a.s.l., 29°07′S, 056°55′W). For this study we consider the extension of Cerro Nazareno as a fourth hill called Cerro Pelón (131 m a.s.l., 29°05′S, 056°56′W). The area covered by

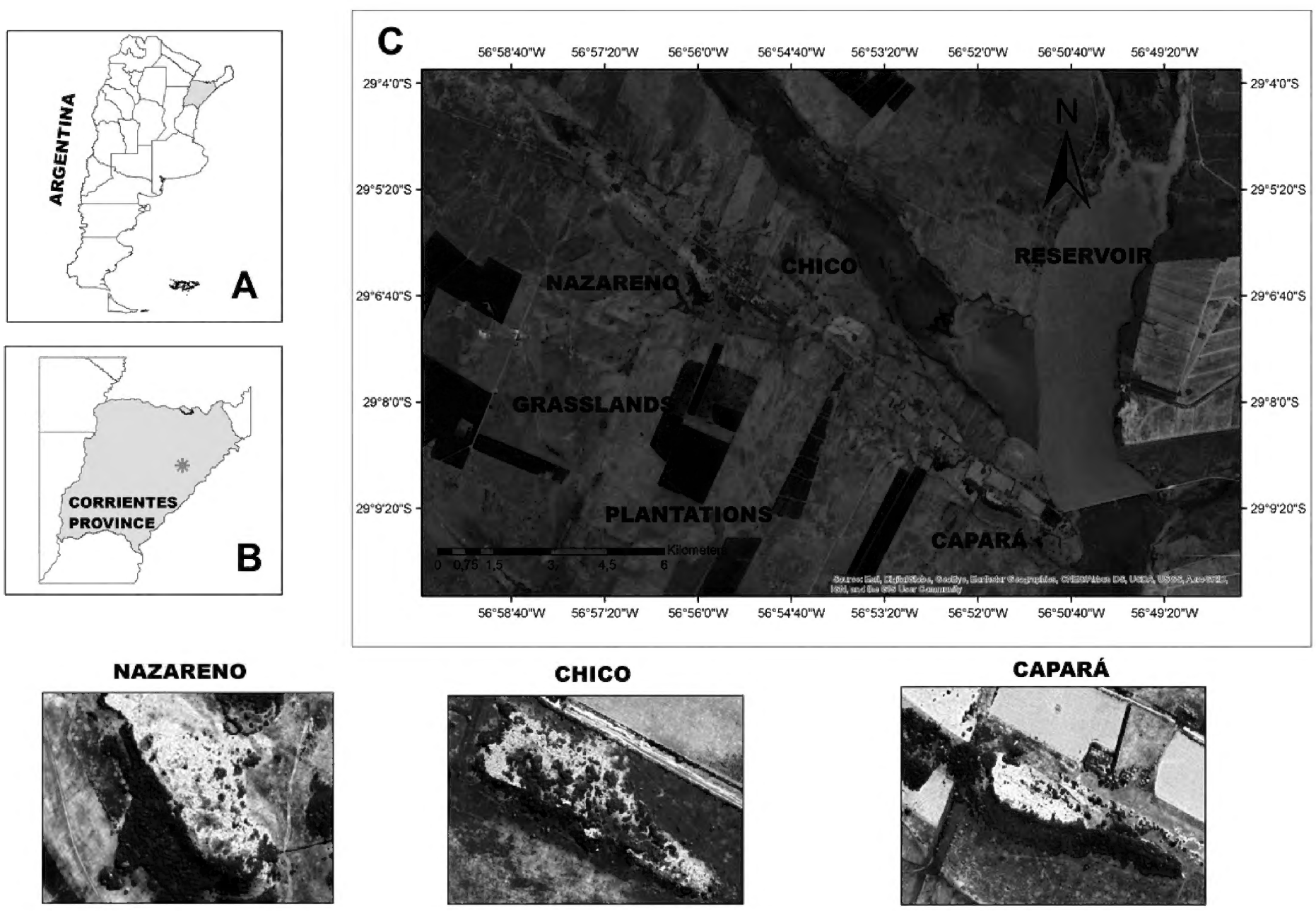

Figure 1. Location of Paraje Tres Cerros in eastern Argentina (**A**) and central-eastern of Corrientes Province (**B**). Different habitat types are shown (**C**), with a closer view of the hills. Imagery source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

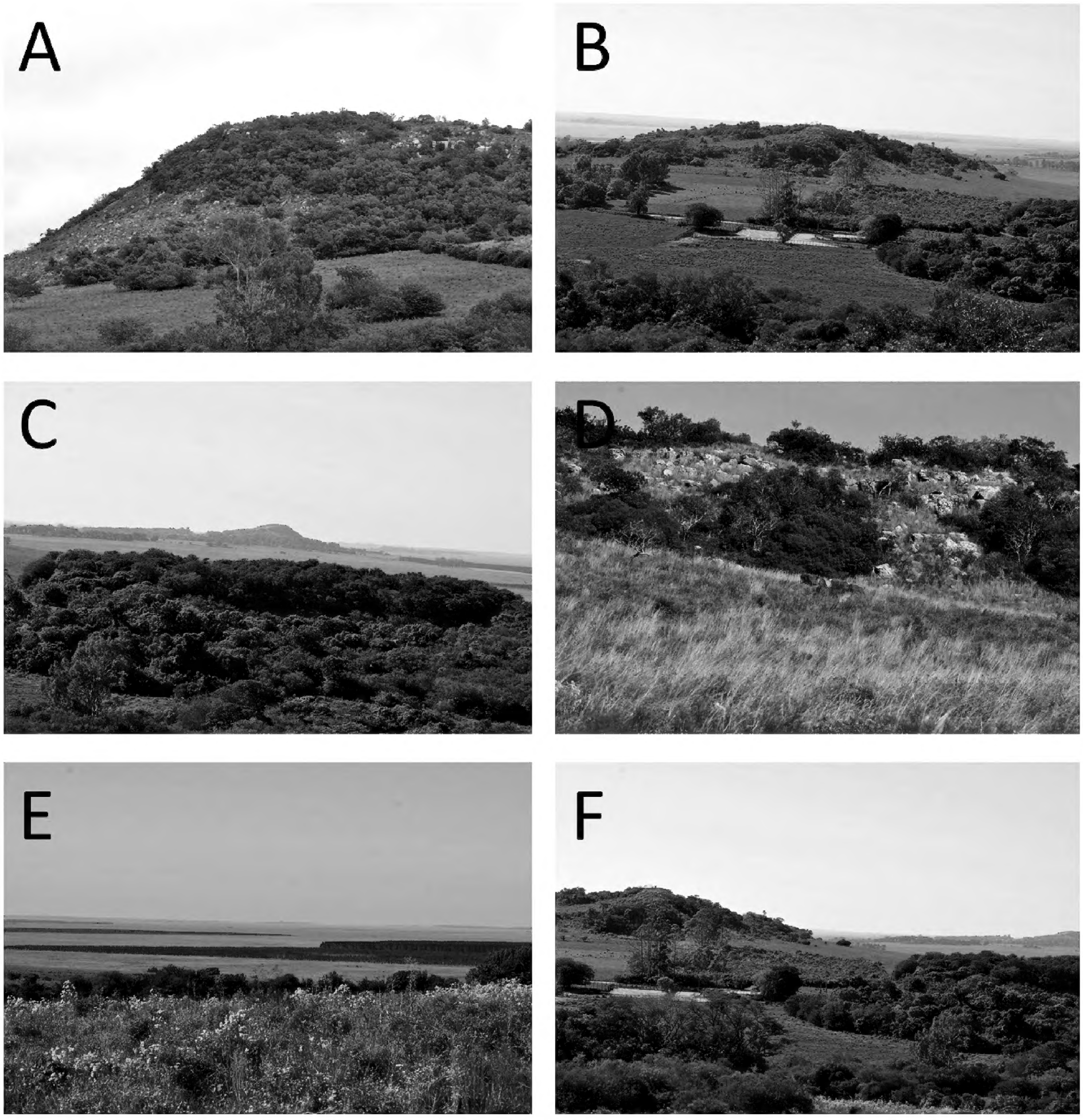

Figure 2. Examples of environments with typical vegetation at some studied sites of Paraje Tres Cerros, including Cerro Nazareno (**A**), Cerro Chico (**B**) with a detail of the southern slope (**C**), Cerro Capará (**D**), exotic *Pinus elliottii* plantation surrounded by savanna (**E**) and forest patches (**F**). Photos: Fernandez, J.M. and Fandiño B.

the hills is 1.86 km^2. The northern slope, with more sunshine and exposed to the warm northern wind, has sparse shrub and herbaceous vegetation among the rocky outcrops. The southern slope, with less incidence of the sun, greater retention of moisture, and protection from the north wind, has developed a primary hygrophilous forest. The floristic elements of these forests are associated with the Atlantic Rainforest biome, but with less species richness (Parodi 1943). The surrounding matrix is mostly represented by savannas dominated by grasses of genus *Elyonurus* (Humb. & Bonpl. ex Willd.) (Fig. 2), flooded grasslands dominated by *Andropogon* (L.), temporary marsh areas locally known as malezales (Parodi 1943), forest patches composed of species of the Chaqueña ecoregion (Parodi 1943), and approximately 5 km^2 of exotic *Pinus elliottii* (Engelmann) plantations. In addition to these plantations, there are also areas used for livestock and rice cultivation. On the edge of Cerro Capará there is a 50 km^2 reservoir which was built to provide water to the rice fields. To characterize the avifauna, we defined six macrohabitat types. These included four natural habitats (Cerro Nazareno, Cerro Chico, Cerro Capará, Cerro Pelón) and two exotic habitats: the reservoir and the exotic pine plantations. As all the hills have the same vegetation cover (i.e., rocky grassland, rocky forest, and matrix forest), we considered all hills as one habitat type to simplify comparisons. Thus, records at each hill correspond to the birds seen or heard both in the

outcrops and in its surrounding matrix. The surrounding matrix was considered in a 1 km radius around the hills.

Methods

Data were collected from 2012 to 2018 using three different methods in all seasons and in all natural and exotic environments. We conducted 120 point-count surveys (Bibby et al. 2000), which were separated 200 m from each other; during the point-count surveys, we recorded all birds heard or seen in 10 minutes within a defined radius of 50 m. We also conducted 136 MacKinnon lists (MacKinnon and Phillipps 1993) of 10 species. During each survey, we recorded the first 10 species encountered, which constitute one MacKinnon list. Sample effort per site is shown in Table 1. We also carried out nonsystematic observations to detect silent or inconspicuous species. We did not survey during strong winds and rains. We only carried out diurnal bird surveys. We recorded the season and the site where each individual was encountered. Birds were detected and identified using 8 × 42 binoculars, a 20 × 60 spotting scope, and field guides (Narosky and Izurieta 2010). We compared the number of species recorded in only one habitat (non-shared species). Species nomenclature follows Remsen et al. (2019). Observations (Table 2) are stored on eBird (http://www.ebird.org). Birds were categorized according to their phenology following Mazar-Barnett and Pearman (2001), Fandiño et al. (2017), and into three categories based on our own data: year-round resident; winter or non-breeding visitor; and summer visitors that migrate north for the autumn-winter. For conservation status, we follow Ministerio de Ambiente y Desarrollo Sustentable de la Nación and Aves Argentinas (MAyDS and AA, 2017) and IUCN (2019).

Table 1. Survey effort in the different macrohabitats of Paraje Tres Cerros.

Macrohabitats	Survey method		
	MacKinnon lists	Point counts	Non-systematic
Capará	60	25	✓
Chico	15	30	✓
Nazareno	61	35	✓
Forestations	—	30	✓
Reservoir	—	—	✓

Results

Table 2. Birds recorded from 2012 to 2017 at Reserva Natural Privada Paraje Tres Cerros and surroundings. Conservation status (CS, National/International): LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered. Migratory status (MS): RE - resident, WV - winter visitant and SV - summer visitant. Sites: Na = Cerro Nazareno, Pe = Cerro Pelón, Ch = Cerro Chico, Ca = Cerro Capará, Re = reservoir, Fo = plantations.

Family/scientific name	Voucher	Na	Pe	Ch	Ca	Re	Fo	MS	CS (NA/IN)
Rheidae									
Rhea americana (Linnaeus, 1758)	Photography	x	x	x	x			R	VU/NT
Tinamidae									
Rhynchotus rufescens (Temminck, 1815)	S21097425	x	x	x	x			R	
Nothura maculosa (Temminck, 1815)	Photography	x	x	x	x	x		R	
Anhimidae									
Chauna torquata (Oken, 1816)	Photography	x		x	x	x		R	
Anatidae									
Dendrocygna viduata (Linnaeus, 1766)	Photography		x			x		R	
Dendrocygna autumnalis (Linnaeus, 1758)	S21097425	x				x		R	
Cairina moschata (Linnaeus, 1758)	S49186218						x	R?	EN/LC
Amazonetta brasiliensis (Gmelin, 1789)	S21097425	x	x	x		x		R	
Anas flavirostris (Vieillot, 1816)	S49186218	x	x		x	x		R	
Podicipedidae									
Podilymbus podiceps (Linnaeus, 1758)	S76329479					x		R	
Podiceps major (Boddaert, 1783)	S38889128					x		R	
Ciconiidae									
Ciconia maguari (Gmelin, 1789)	Photography	x	x	x	x	x		R	
Jabiru mycteria (Lichtenstein, 1819)	Photography					x		R	
Mycteria americana (Linnaeus, 1758)	S21097425	x				x	x	R	
Phalacrocoracidae									
Phalacrocorax brasilianus (Gmelin, 1789)	S21097425					x		R	
Anhingidae									
Anhinga anhinga (Linnaeus, 1766)	S21097425					x		R	
Ardeidae									
Tigrisoma lineatum (Boddaert, 1783)	Photography	x		x		x	x	R	
Nycticorax nycticorax (Linnaeus, 1758)	S21097425	x						R	
Butorides striata (Linnaeus, 1758)	S21097425	x	x	x		x		SV	
Bubulcus ibis (Linnaeus, 1758)	S21097425	x			x	x		R	
Ardea cocoi (Linnaeus, 1766)	Photography	x		x		x	x	R	

Family/scientific name	Voucher	Na	Pe	Ch	Ca	Re	Fo	MS	CS (NA/IN)
Ardea alba (Linnaeus, 1758)	Photography	x				x		R	
Syrigma sibilatrix (Temminck, 1824)	Photography	x		x	x	x		R	
Egretta thula (Molina, 1782)	Photography		x	x		x		R	
Threskiornithidae									
Plegadis chihi (Vieillot, 1817)	S21097425		x			x		R	
Phimosus infuscatus (Lichtenstein, 1823)	S21097425				x			R	
Theristicus caerulescens (Vieillot, 1817)	Photography	x	x	x	x		x	R	
Theristicus caudatus (Boddaert, 1783)	S76329479	x						R	
Platalea ajaja (Linnaeus, 1758)	S21097425				x			R	
Cathartidae									
Cathartes aura (Linnaeus, 1758)	Photography	x		x	x	x		R	
Cathartes burrovianus (Cassin, 1845)	S49186218					x		R	
Coragyps atratus (Bechstein, 1783)	Photography	x			x			R	
Accipitridae									
Busarellus nigricollis (Latham, 1790)	S49186218	x						R	
Rostrhamus sociabilis (Vieillot, 1817)	S49186218	x				x		R	
Circus cinereus (Vieillot, 1816)	S76329479	x			x			WV?	
Circus buffoni (Gmelin, 1788)	S21097425	x	x	x	x	x		R	VU/LC
Accipiter striatus (Vieillot, 1807)	S76329479	x						R?	
Buteogallus meridionalis (Latham, 1790)	Photography	x		x		x	x	R	
Buteogallus urubitinga (Gmelin, 1788)	Photography					x		R	
Rupornis magnirostris (Gmelin, 1788)	S49186218	x		x	x	x	x	R	
Geranoaetus albicaudatus (Vieillot, 1816)	Photography	x						R?	
Geranoaetus melanoleucus (Vieillot, 1819)	Photography	x		x			x	R	
Buteo brachyurus (Vieillot, 1816)	S76329479	x						R?	
Aramidae									
Aramus guarauna (Linnaeus, 1766)	Photography					x		R	
Rallidae									
Aramides ypecaha (Vieillot, 1819)	Photography	x		x		x		R	
Aramides cajaneus (Müller, 1776)	S76329479	x						R	
Laterallus melanophaius (Vieillot, 1819)	S49186218	x						R	
Porphyriops melanops (Vieillot, 1819)	S49186218					x		R	
Porphyrio martinicus (Linnaeus, 1766)	S49186218	x						R	
Charadriidae									
Vanellus chilensis (Molina, 1782)	Photography	x	x	x	x	x	x	R	
Recurvirostridae									
Himantopus mexicanus (Linnaeus, 1758)	S38889128	x	x	x		x		R	
Scolopacidae									
Gallinago paraguaiae (Vieillot, 1816)	S38889128	x		x	x			R	
Tringa solitaria (Wilson, 1813)	S76329479		x					SV	
Jacanidae									
Jacana jacana (Linnaeus, 1766)	Photography	x	x	x	x	x		R	
Rostratulidae									
Nycticryphes semicollaris (Vieillot, 1816)	S76329479					x		WV	
Laridae									
Phaetusa simplex (Gmelin, 1789)	S21097425					x		R	
Columbidae									
Patagioenas picazuro (Temminck, 1813)	S21097425	x	x	x	x	x	x	R	
Patagioenas maculosa (Temminck, 1813)	Photography	x			x			R	
Leptotila verreauxi (Bonaparte, 1855)	S21097425	x	x	x	x	x		R	
Leptotila rufaxilla (Richard & Bernard, 1792)	S76329479	x		x	x			R	
Zenaida auriculata (Des Murs, 1847)	S21097425	x	x	x	x	x	x	R	
Columbina picui (Temminck, 1813)	S21097425	x	x	x	x	x		R	
Cuculidae									
Piaya cayana (Linnaeus, 1766)	S76329479	x		x	x			R	
Coccyzus melacoryphus (Vieillot, 1817)	S76329479	x		x	x	x		SV	
Crotophaga ani (Linnaeus, 1758)	Photography	x		x				R	
Guira guira (Gmelin, 1788)	Photography	x	x	x	x	x		R	
Tapera naevia (Linnaeus, 1766)	S21097425	x		x	x			SV	
Tytonidae									
Tyto alba (Scopoli, 1769)	S76329479	x						R	
Strigidae									
Megascops choliba (Vieillot, 1817)	S76329479	x		x	x			R	

Family/scientific name	Voucher	Na	Pe	Ch	Ca	Re	Fo	MS	CS (NA/IN)
Bubo virginianus (Gmelin, 1788)	S76329479				x			R	
Athene cunicularia (Molina, 1782)	Photography			x	x			R	
Caprimulgidae									
Chordeiles nacunda (Vieillot, 1817)	S76329479		x					R	
Nyctidromus albicollis (Gmelin, 1789)	S76329479	x						R	
Setopagis parvula (Gould, 1837)	Photography	x			x			SV	
Hydropsalis torquata (Gmelin, 1789)	S76329479	x		x	x			R	
Trochilidae									
Chlorostilbon lucidus (D'Orbigny & Lafresnaye, 1838)	S21097425	x						R	
Hylocharis chrysura (Shaw, 1812)	Photography	x		x	x			R	
Anthracothorax nigricollis (Vieillot, 1817)	Photography	x						?	
Alcedinidae									
Megaceryle torquata (Linnaeus, 1766)	Photography	x				x		R	
Picidae									
*Melanerpes candidus (*Otto, 1796)	S76329479	x		x	x			R	
Dryobates spilogaster (Wagler, 1827)	Photography	x		x				R	
Colaptes melanochloros (Gmelin, 1788)	Photography	x	x	x	x		x	R	
Colaptes campestris (Vieillot, 1818)	Photography	x		x	x	x	x	R	
Dryocopus lineatus (Linnaeus, 1766)	Photography	x		x				R	
Falconidae									
Caracara plancus (Miller, 1777)	S21097425	x		x	x	x	x	R	
Milvago chimachima (Vieillot, 1816)	S76329479					x	x	R	
Milvago chimango (Vieillot, 1816)	S21097425	x	x	x	x	x	x	R	
Falco sparverius (Linnaeus, 1758)	S21097425	x		x		x		R	
*Falco femoralis (*Temminck, 1822*)*	S76329479	x		x	x	x		R	
Psittacidae									
*Myiopsitta monachus (*Boddaert, 1783)	S21097425	x	x	x	x	x	x	R	
Thamnophilidae									
Taraba major (Vieillot, 1816)	S21097425	x		x				R	
Thamnophilus caerulescens (Vieillot, 1816)	S76329479	x						R	
Furnariidae									
Furnarius rufus (Gmelin, 1788)	S21097425	x	x	x	x	x	x	R	
Phacellodomus ruber (Vieillot, 1817)	S21097425	x	x	x		x		R	
Anumbius annumbi (Vieillot, 1817)	S21097425	x	x	x	x			R	
Pseudoseisura lophotes (Reichenbach, 1853)	S76329479			x				R	
Schoeniophylax phryganophilus (Vieillot, 1817)	S49186218	x	x	x	x		x	R	
Certhiaxis cinnamomeus (Gmelin, 1788)	S21097425					x		R	
Synallaxis frontalis (Pelzeln, 1859)	S76329479	x		x	x			R	
Tyrannidae									
Elaenia spectabilis (Pelzeln, 1868)	S21097425	x		x	x			SV	
Elaenia parvirostris (Pelzeln, 1868)	S76329479	x		x	x			SV	
Camptostoma obsoletum (Temminck, 1824)	S76329479	x		x	x			R	
Suiriri suiriri (Vieillot, 1818)	S76329479			x				R	
Serpophaga subcristata (Vieillot, 1817)	S76329479	x	x	x	x			R	
Polystictus pectoralis (Vieillot, 1817)	Photography				x			SV	VU/NT
Euscarthmus meloryphus (Wied, 1831)	S76329479	x						SV	
Hemitriccus margaritaceiventer (D'Orbigny & Lafresnaye, 1837)	Photography	x						R	
Myiophobus fasciatus (Müller, 1776)	S76329479	x	x	x	x			SV	
Lathrotriccus euleri (Cabanis, 1868)	S76329479	x		x	x			SV	
Cnemotriccus fuscatus (Cabanis, 1868)	S76329479	x						SV	
Pyrocephalus rubinus (Boddaert, 1783)	Photography	x	x		x			R	
Knipolegus cyanirostris (Vieillot, 1818)	S76329479	x	x	x				WV	
Hymenops perspicillatus (Gmelin, 1789)	Photography				x			R	
Satrapa icterophrys (Vieillot, 1818)	Photography	x						R	
Xolmis irupero (Vieillot, 1823)	Photography	x	x	x		x		R	
Machetornis rixosa (Vieillot, 1819)	Photography	x	x	x	x	x	x	R	
Pitangus sulphuratus (Linnaeus, 1766)	Photography	x	x	x	x	x	x	R	
Myiodynastes maculatus (Müller, 1776)	S76329479	x		x	x			SV	
Megarynchus pitangua (Linnaeus, 1766)	S76329479	x		x	x			R	
Empidonomus varius (Vieillot, 1818)	S76329479	x						SV	
Tyrannus melancholicus (Vieillot, 1819)	Photography	x	x	x	x			SV	
Tyrannus savana (Vieillot, 1808)	Photography	x		x	x	x		SV	
Myiarchus swainsoni (Cabanis & Heine, 1859)	S76329479	x			x			SV	

Family/scientific name	Voucher	Na	Pe	Ch	Ca	Re	Fo	MS	CS (NA/IN)
Myiarchus tyrannulus (Müller, 1776)	S76329479	x						R	
Cotingidae									
Phytotoma rutila (Vieillot, 1818)	S76329479	x						WV	
Tityridae									
Pachyramphus viridis (Vieillot, 1816)	Photography				x			R	
Pachyramphus polychopterus (Vieillot, 1818)	S76329479	x		x	x			SV	
Vireonidae									
Cyclarhis gujanensis (Gmelin, 1789)	S76329479	x		x	x			R	
Vireo chivi (Vieillot, 1817)	S76329479	x			x			SV	
Hirundinidae									
Progne tapera (Linnaeus, 1766)	S21097425	x		x	x	x		SV	
Progne chalybea (Gmelin, 1789)	S21097425	x				x		SV	
Tachycineta leucorrhoa (Vieillot, 1817)	S49186218	x			x			R	
Riparia riparia (Linnaeus, 1758)	S21097425					x		SV	
Hirundo rustica (Linnaeus, 1758)	Photography			x		x		SV	
Troglodytidae									
Troglodytes aedon (Vieillot, 1809)	S21097425	x	x	x	x			R	
Polioptilidae									
Polioptila dumicola (Vieillot, 1817)	Photography	x	x	x	x	x		R	
Donacobiidae									
Donacobius atricapilla (Linnaeus, 1766)	S21097425					x		R	
Turdidae									
Turdus amaurochalinus (Cabanis 1850)	S49186218	x	x	x	x			R	
Turdus leucomelas (Vieillot, 1818)	Photography	x		x	x			R	
Turdus rufiventris (Vieillot, 1818)	Photography	x		x	x			R	
Mimidae									
Mimus saturninus (Lichtenstein, 1823)	Photography	x	x	x	x	x		R	
Mimus triurus (Vieillot, 1818)	S76329479	x	x	x	x	x		WV	
Motacillidae									
Anthus lutescens (Pucherna, 1855)	S49186218			x				R	
Anthus hellmayri (Hartert, 1909)	S76329479				x			R	
Thraupidae									
Paroaria coronata (Miller, 1776)	Photography			x	x	x		R	
Thlypopsis sordida (D'Orbigny & Lafresnaye, 1837)	S76329479			x				?	
Tachyphonus rufus (Boddaert, 1783)	S76329479			x				R	
Pipraeidea bonariensis (Gmelin, 1789)	S76329479	x			x	x		R	
Thraupis sayaca (Linnaeus, 1766)	S21097425	x	x	x	x			R	
Donacospiza albifrons (Vieillot, 1817)	S76329479		x		x			R	
Gubernatrix cristata (Vieillot, 1817)[1]	Photography							R	EN/EN
Microspingus melanoleucus (D'Orbigny & Lafresnaye, 1837)	S76329479	x		x				R	
Sicalis flaveola (Linnaeus, 1766)	Photography	x		x	x	x		R	
Sicalis luteola (Sparrman, 1789)	S21097425	x		x	x	x		R	
Emberizoides herbicola (Vieillot, 1817)	S76329479		x		x		x	R	
Emberizoides ypiranganus (Ihering, 1907)	S49186218				x			R	VU/LC
Embernagra platensis (Gmelin, 1789)	S21097425		x		x		x	R	
Volatinia jacarina (Linnaeus, 1766)	S76329479	x						SV	
Sporophila palustris (Barrows, 1883)	Photography					x		SV	EN/EN
Sporophila cinnamomea (Lafresnaye, 1839)	Photography					x		SV	VU/VU
Sporophila caerulescens (Vieillot, 1823)	Photography	x		x				SV	
Sporophila collaris (Boddaert, 1783)	S76329479					x		R	
Coryphospingus cucullatus (Müller, 1776)	S21097425	x		x	x			R	
Saltator coerulescens (Vieillot, 1817)	S21097425	x		x				R	
Saltator similis (D'Orbigny & Lafresnaye, 1837)	S76329479	x		x	x			R	
Saltator aurantiirostris (Vieillot, 1817)	S76329479			x				R	
Emberizidae									
Ammodramus humeralis (Bosc, 1792)	Photography	x	x	x	x			R	
Zonotrichia capensis (Müller, 1776)	Photography	x	x	x	x	x	x	R	
Cardinalidae									
Piranga flava (Vieillot, 1822)	Photography	x		x	x	x		R	
Cyanoloxya brissonii (Lichtenstein, 1823)	S21097425	x		x				R	
Parulidae									
Geothlypis aequinoctialis (Gmelin, 1789)	S49186218					x		R	
Setophaga pitiayumi (Vieillot, 1817)	S76329479	x		x	x			R	

Family/scientific name	Voucher	Na	Pe	Ch	Ca	Re	Fo	MS	CS (NA/IN)
Myiothlypis leucoblephara (Vieillot, 1817)	S76329479	x		x	x			R	
Basileuterus culicivorus (Swainson, 1838)	Photography	x		x	x			R	
Icteridae									
Psarocolius decumanus (Pallas, 1769)	Photography	x				?		?	
Icterus pyrrhopterus (Vieillot, 1819)	S21097425	x		x	x	x		R	
Gnorimopsar chopi (Vieillot, 1819)	S21097425	x		x				R?	
Amblyramphus holosericeus (Scopoli, 1786)	Photography					x		R	VU/LC
Agelasticus cyanopus (Vieillot, 1819)	S21097425					x		R	
Chrysomus ruficapillus (Vieillot, 1819)	S21097425					x		R	
Pseudoleistes virescens (Vieillot, 1819)	Photography	x		x	x	x		R	
Agelaioides badius (Vieillot, 1819)	S21097425	x		x		x		R	
Molothrus rufoaxillaris (Cassin, 1866)	S21097425	x		x				R	
Molothrus bonariensis (Gmelin, 1789)	S21097425	x	x		x			R	
Sturnella superciliaris (Bonaparte, 1851)	S21097425				x	x		R	
Fringillidae									
Spinus magellanicus (Vieillot, 1805)	S21097425	x	x		x			R	
Euphonia chlorotica (Linnaeus, 1766)	Photography	x		x	x	x		R	
Euphonia cyanocephala (Vieillot, 1818)	S76329479	x						WV	

We recorded 188 species from 49 families and 21 orders (Table 2). The most diverse family was Tyrannidae (26 species) followed by Thraupidae (21 species). Within non-passeriformes the richest family was Accipitridae (11 species). The highest species richness was recorded at Cerro Nazareno (139 species), which represents 75.5% of the total, followed by Cerro Chico (105), Cerro Capará (99), the reservoir (83), pine plantations (65), and finally Cerro Pelón (50). Of all species, 33 were found in all four hills, 50 in at least three of hills, and 39 in only one. The number of non-shared species was greater in the reservoir and Cerro Nazareno (23 and 24 species, respectively).

According to their migratory status, 146 species (80.6%) are residents in the area and 32 (17.7%) are migrants. We could not assign any status to the remaining nine species due to the low number of records. Among migrant species, 28 are summer visitants and only three are winter visitants: *Euphonia cyanocephala* (Vieillot, 1818), *Knipolegus cyanirostr*is (Vieillot, 1818), and *Mimus triurus* (Vieillot, 1818). According to our data, 60 species were recorded in all seasons, and the highest proportion occurred in spring (73%).

Of all recorded species, five are globally threatened (IUCN 2019): *Sporophila palustris* (Barrows, 1883) and *Gubernatrix cristata* (Vieillot, 1817) are Endangered: *S. cinnamomea* (Lafresnaye, 1839) is Vulnerable; and *Rhea americana* (Linnaeus, 1817) and *Polystictus pectoralis* (Vieillot, 1758) are Near Threatened. Nationally, two species are Vulnerable: *Emberizoides ypiranganus* (Ihering, 1907) and *Amblyramphus holosericeus* (Scopoli, 1786); *Cairina moschata* (Linnaeus, 1758) is Threatened. We recorded no exotic species.

Below, we describe some aspects of the observations of some species recorded in Paraje Tres Cerros.

Rheidae

***Rhea americana* (Linnaeus, 1817)**
Figure 3A

Observations. ARGENTINA • Multiple (♂, ♀ and juveniles); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′55″S, 056°55′09″W. Several adults and chicks recorded foraging in the grasslands of PTC during all seasons. We recorded this species in systematic and non-systematic observations since the beginning of our study.

Identification. Unmistakable. Often in groups. Long and powerful legs, small head. Three toes. Plumage is gray with black around the neck and head. Males are darker than females.

Tinamidae

***Rhynchotus rufescens* (Temminck, 1815)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′55″S, 056°55′12″W. It was recorded several times in the grasslands of PTC. More often heard than seen.

Identification. Differs from other tinamous by its vocalization. Head, neck and breast cinnamon-rufous.

***Nothura maculosa* (Temminck, 1815)**
Figure 3B

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′33″S, 056°55′21″W. Several individuals have been heard and seen, hiding in the grasslands of PTC. This species was recorded in all macrohabitats with the exception of plantations.

Identification. Base coloration is olivaceous brown, spotted with black. Easier to detect by its particular vocalization, very different from *Rhynchotus rufescens* (Temminck, 1815), another common Tinamidae in the area.

Anhimidae

***Chauna torquata* (Oken, 1816)**
Figure 3C

Observations. ARGENTINA • Multiple; Corrientes, La

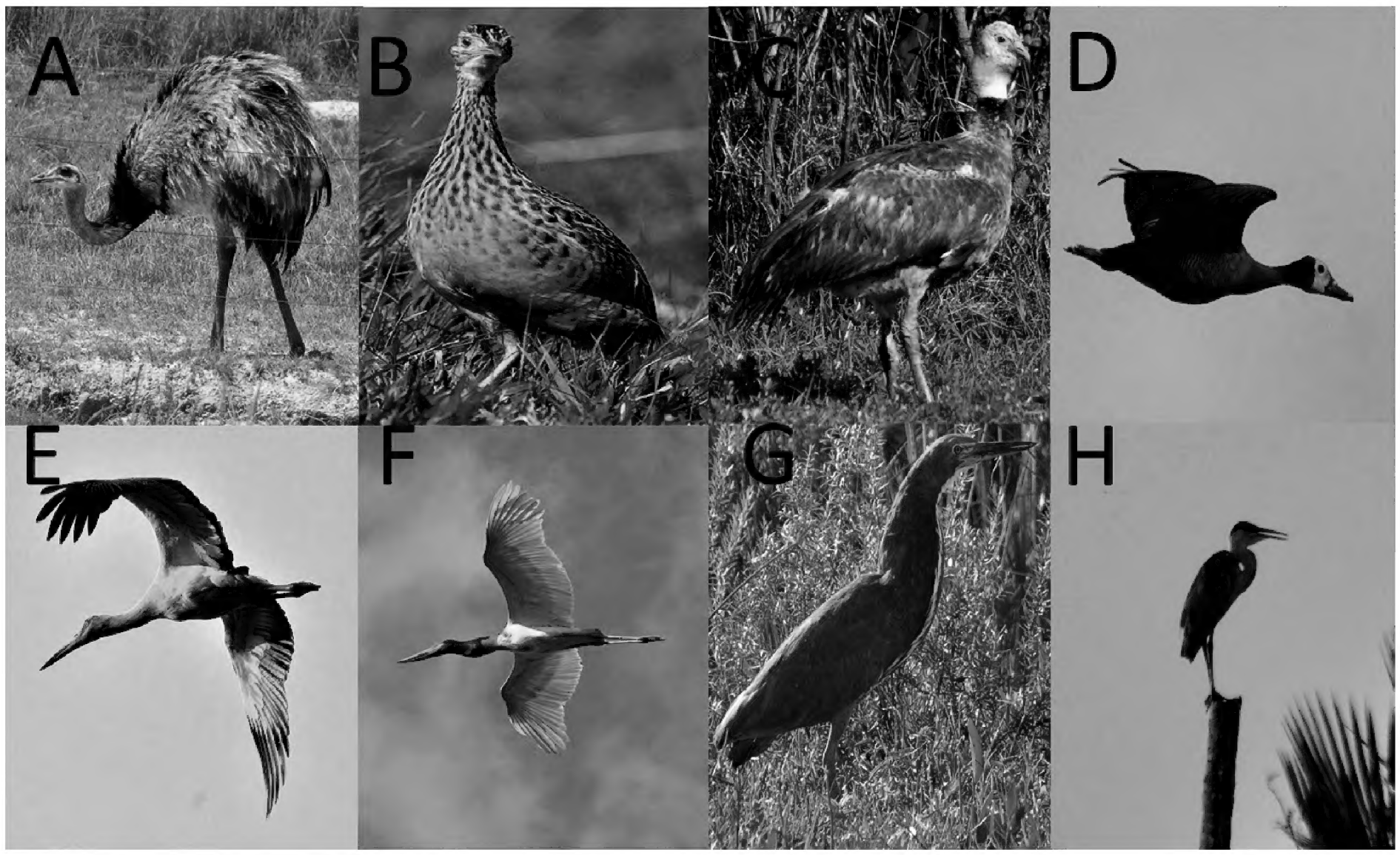

Figure 3. Bird species found during surveys. **A.** *Rhea americana*. **B.** *Nothura maculosa*. **C.** *Chauna torquata*. **D.** *Dendrocygna viduata*. **E.** *Ciconia maguarii*. **F.** *Jabiru mycteria*. **G.** *Tigrisoma lineatum*. **H.** *Ardea cocoi*.

Cruz, Paraje Tres Cerros; 29°07′01″S, 056°53′34″W. We saw several individuals near wetlands during all seasons.

Identification. Unmistikable. Collars black and white and thick legs reddish. Loud screams.

Anatidae

***Dendrocygna viduata* (Linnaeus, 1766)**

Figure 3D

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′10″S, 056°54′20″W. Several individuals in flooded grasslands and flying.

Identification. Distinguishable from other species in the genus *Dendrocygna* by the front of head and throat, white, and back of head black.

***Dendrocygna autumnalis* (Linnaeus, 1758)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′09″S, 056°54′45″W. Often seen in groups near wetlands.

Identification. Distinguished from other ducks by its red bill, wing band white, rump and belly black.

***Cairina moschata* (Linnaeus, 1758)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′31″S, 056°49′51″W. One adult male recorded near the reservoir.

Identification. Black. Identified by its large white patches on the wings. Caruncle red (absent in females). The color of the domestic breed's plumage is more variable and has more pronounced caruncles.

***Amazonetta brasiliensis* (Gmelin, 1789)**

Observations. ARGENTINA • 4 (2♀ 2 ♂); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′31″S, 056°49′51″W. We recorded two pairs in mixed flocks with other wetland-related species.

Identification. Predominantly brown. Speculum seen in flight green and blue. Males and females distinguished by facial pattern.

***Anas flavirostris* (Vieillot, 1816)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′31″S, 056°49′51″W.

Identification. Resembles *A. georgica* (Gmelin, 1789), but smaller, with darker head, shorter neck, and plain flanks.

Podicipedidae

***Podilymbus podiceps* (Linnaeus, 1758)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°08′50″S, 056°50′50″W. One individual was recorded in March 2016 in the reservoir.

Identification. Non-breeding plumage predominantly dark brown; throat whitish. Bill short, thick, and pale.

***Podiceps major* (Boddaert, 1783)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′36″S, 056°49′40″W. We recorded two individuals in open waters in the reservoir. Probably a pair.

Identification. Head dark grey; long neck and tail rufous;

underparts white. Bill long, pointed.

Ciconiidae

***Ciconia maguarii* (Gmelin, 1789)**
Figure 3E

Observations. ARGENTINA • 8 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′38″S, 056°52′51″W. We saw individuals flying over the grasslands and wetlands all year-round.

Identification. Differs from other storks by its plumage black and white. Legs and around eyes, red.

***Jabiru mycteria* (Lichtenstein, 1819)**
Figure 3F

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′09″S, 056°52′28″W. Four individuals recorded walking in flooded-savanna and wetlands.

Identification. Largest stork. Overall white; head black; collar red.

***Mycteria americana* (Linnaeus, 1758)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′19″S, 056°56′04″W. We recorded four indiviuals foraging in flooded grassland near Cerro Nazareno.

Identification. Almost entirely, white, with primaries, secondaries, and tail black. Bill long, with curved tip.

Phalacrocoracidae

***Phalacrocorax brasilianus* (Gmelin, 1789)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′32″S, 056°50′10″W. Recorded in large flocks. Common in the study site.

Identification. Overall black and gray, iris turquoise, gular yellow.

Anhingidae

***Anhinga anhinga* (Linnaeus, 1766)**

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′13″S, 056°49′27″W. One individual recorded perching over shallow water.

Identification. Bill long, pointed; neck long. Females has upper chest and neck, brown.

Ardeidae

***Tigrisoma lineatum* (Boddaert, 1783)**
Figure 3G

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′26″S, 056°55′28″W. Adults and juveniles were recorded foraging in shallow water.

Identification. Adults are distinct from other herons. Neck and head rufous. Central streaks with rufous and conspicuous white lines.

***Nycticorax nycticorax* (Linnaeus, 1758)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′24″S, 056°55′29″W. Recorded flying over the farmhouse at night.

Identification. Differs from other herons by its cap black, wings gray and eyes red

***Butorides striata* (Linnaeus, 1758)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′19″S, 056°51′11″W. Recorded perching on a branch near a pond.

Identification. Cap gray. Plumage bluish gray with a rufous and white streak on breast

***Bubulcus ibis* (Linnaeus, 1758)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′08″S, 056°54′21″W. Recorded near grazing animals.

Identification. Differs from other herons its orange plumage on head, breast, and lower back.

***Ardea cocoi* (Linnaeus, 1766)**
Figure 3H

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′19″S, 056°55′25″W. Several individuals, recorded in all seasons, foraging near or in shallow water.

Identification. Largest of the herons. Black on head. Mainly grey over back and wings.

***Ardea alba* (Linnaeus, 1758)**
Figure 4A

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′57″S, 056°55′19″W. Roosting in large colonies, with other waterbirds, near wetlands.

Identification. Larger than similar Snowy Egret (*Egretta thula* Molina, 1782), but bill yellow and feet blackish in *A. alba*.

***Syrigma sibilatrix* (Temminck, 1824)**
Figure 4B

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′59″S, 056°55′24″W. We recorded several individuals foraging in pastures and wet grasslands.

Identification. Identified by bare blue skin on the face and gray cap, bill pinck with black tip.

***Egretta thula* (Molina, 1782)**
Figure 4C

Observations. ARGENTINA • Multiple (no sexual

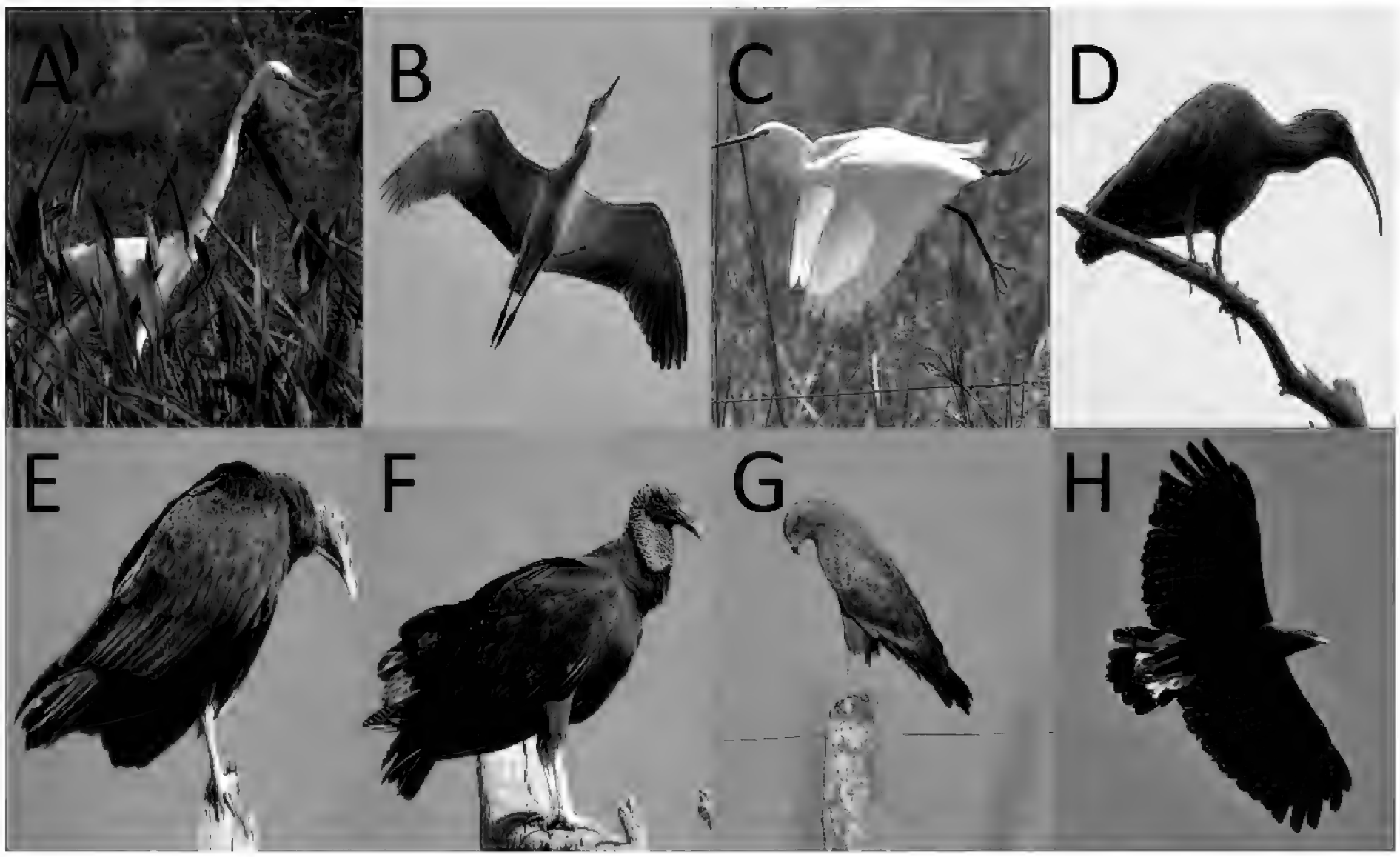

Figure 4. Bird species found during surveys. **A.** *Ardea alba*. **B.** *Syrigma sibilatrix*. **C.** *Egretta thula*. **D.** *Theristicus caerulescens*. **E.** *Cathartes aura*. **F.** Coragyps atratus. **G.** *Buteogallus meridionalis*. **H.** *Buteogallus urubitinga*.

dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′57″S, 056°55′18″W. Several individuals foraging in shallow waters. Recorded in all seasons.

Identification. Identified by black bill and black legs with yellow feet.

Threskiornithidae

***Plegadis chihi* (Vieillot, 1817)**

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′ 24″S, 056°50′33″W. Recorded flying over the reservoir.

Identification. Differs from *Phimosus infuscatus* (Lichtenstein, 1823) in color. It has head, upper breast and back, reddish, with iridescent green wing feathers.

***Phimosus infuscatus* (Lichtenstein, 1823)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′ 49″S, 056°51′15″W. Foraging in wet grasslands.

Identification. Overall black. Front of the head bared, reddish.

***Theristicus caerulescens* (Vieillot, 1817)**
Figure 4D

Observations. ARGENTINA • 6 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′29″S, 056°55′30″W. We recorded several individuals at sunset, settling into their roost in the top of trees.

Identification. Notably large ibis. It was identified by its size, forehead white and crest bushy. Similar appearance to the sympatric *T. caudatus* but differs in coloration.

***Theristicus caudatus* (Boddaert, 1783)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′35″S, 056°56′04″W. Recorded near flooded grasslands.

Identification. Similar in shape to *T. caerulescens*, but differs by its rufous cap and neck.

***Platalea ajaja* (Linnaeus, 1758)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°50′24″W. Recorded in shallow water in the reservoir.

Identification. Identified by its distinctive bill shape. Plumage mostly bright pink.

Cathartidae

***Cathartes aura* (Linnaeus, 1758)**
Figure 4E

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′38″S, 056°55′50″W. Often recorded flying on thermals above the rocky outcrops in mixed flocks.

Identification. Similar to Yellow-headed Vulture (*C. burrovianus* Cassin, 1845) and Black Vulture (*Coragyps atratus* Bechstein, 1783). It was identified by head and neck reddish and whitish ventral surface of remiges.

Cathartes burrovianus **(Cassin, 1845)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′03″S, 056°49′18″W.

Identification. Differs from other vultures by its yellow bare skin on the head and neck.

Coragyps atratus **(Bechstein, 1783)**
Figure 4F

New records. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′38″S, 056°55′50″W. Highly social birds and very common in the study site. We recorded several individuals in mixed flocks, usually soaring on thermals above rocky outcrops.

Identification. We identified this species by its bare black head and white wingtips, which are easily recognized in flight.

Accipitridae

Busarellus nigricollis **(Latham, 1790)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′14″S, 056°56′00″W. Registered perching near a pond.

Identification. Predominantly chesnut with pale head; frontal collar, tail, and primaries black.

Rostrhamus sociabilis **(Vieillot, 1817)**

Observations. ARGENTINA • 4♀2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°08′27″S, 056°51′48″W. Common in the study site. Recorded near the reservoir and near ponds.

Identification. Strongly down-curved bill, rump, and tip of the tail white. Male mostly dark gray and female brownish.

Circus cinereus **(Vieillot, 1816)**

Observations. ARGENTINA • 1♀1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′00″S, 056°55′31″W. Recorded flying low over wet grasslands.

Identification. Male predominantly gray with barred below. Female larger, above dark brown.

Circus buffoni **(Gmelin, 1788)**

Observations. ARGENTINA • 5♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′43″S, 056°55′17″W. More common than *C. cinereus.* Recorded flying low over wet grasslands.

Identification. Light morph differs from *C. cinereus* by its white belly and head and back black.

Accipiter striatus **(Vieillot, 1807)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′42″S, 056°55′58″W. Recorded two times in the forest of Cerro Nazareno.

Identification. Light morph identified by its relatively small size; upperparts bluish; finely rufous barred underparts, iris orange-yellow.

Buteogallus meridionalis **(Latham, 1790)**
Figure 4G

New records. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′33″N, 056°50′26″W. Five individuals recorded in different surveys perching or flying near water.

Identification. Mostly cinnamon-brown. Wings with all remiges broadly edged black. Black tail with median band and tip white.

Buteogallus urubitinga **(Gmelin, 1788)**
Figure 4H

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′39″S, 056°56′08″W. We saw one individual flying in the grassland near water.

Identification. Almost entirely black. Tail is mostly black with a broad white band.

Rupornis magnirostris **(Gmelin, 1788)**

Observations. ARGENTINA • 10 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′27″S, 056°53′44″W. Recorded in all seasons. Common in forest edges and open areas.

Identification. Head and upperparts brown, barred on breast and belly. Cere and iris yellow.

Geranoaetus albicaudatus **(Vieillot, 1816)**
Figure 5A

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′39″S, 056°55′27″W. One individual recorded perching in *Pinus* sp.

Identification. Identified by primaries extended beyond white tail. Shoulders rufous and hood blackish.

Geranoaetus melanoleucus **(Vieillot, 1819)**
Figure 5B

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′29″S, 056°55′52″W. We saw individuals soaring over the rocky outcrops among with a flock of vultures. In November 2017 we found an active nest placed in a *Eucalyptus* (L'Hér.) tree (29°05′47″S, 056°55′03″W) with one nestling.

Identification. Identified by wings broad and tail short and triangular. Underparts and breast gray.

Buteo brachyurus **(Vieillot, 1816)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′40″S, 056°55′28″W. Rare in the study area. It was recorded only one time. We saw a light-morph individual

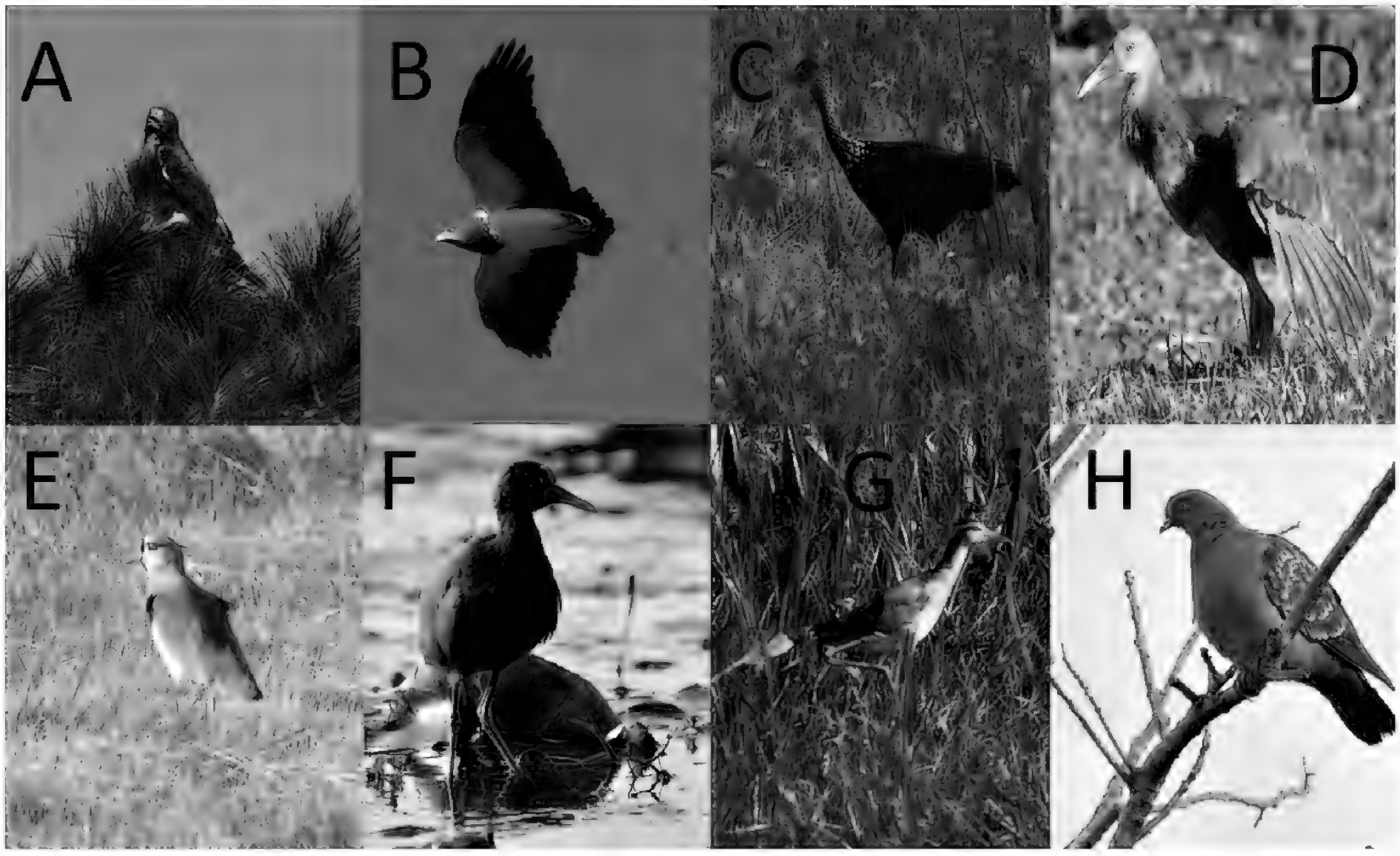

Figure 5. Bird species found during surveys. **A.** *Geranoaetus albicaudatus*. **B.** *Geranoaetus melanoleucus*. **C.** *Aramus guarauna*. **D.** *Aramides ypecaha*. **E.** *Vanellus chilensis*. **F.** *Jacana jacana* (Adult). **G.** *Jacana jacana* (juvenile). **H.** *Patagioenas maculosa*.

perching on the top of a *Eucalyptus* tree near a forest patch.

Identification. Head and upperparts dark, with contrasting underparts white. Forehead white. Wing-tips reach tail tip on perched birds.

Aramidae

***Aramus guarauna* (Linnaeus, 1766)**

Figure 5C

New records. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′27″S, 056°55′50″W. Common species in the study area. Usually recorded in scattered flocks foraging in wetlands.

Identification. Resembles an Ibis. Identified by its long neck, large size, bill yellowish and feathers with white markings.

Rallidae

***Aramides ypecaha* (Vieillot, 1819)**

Figure 5D

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′34″S, 056°55′23″W. Common in the study area. Several individuals observed in open grounds.

Identification. Identified by chestnut hindneck, which is grey in similar *A. cajaneus* (Müller, 1776).

***Aramides cajaneus* (Müller, 1776)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′40″S, 056°56′21″W. Less common than *A. ypecaha*. Recorded in the grasslands of Cerro Nazareno.

Identification. Similar to *A. ypecaha* but with entirely grey head and neck.

***Laterallus melanophaius* (Vieillot, 1819)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′12″S, 056°56′00″W. Recorded in a pond near Cerro Nazareno.

Identification. Distinguished by its rufous on the cheeks, neck and breast. Throat and breast white. Barred flanks. Legs brown.

***Porphyriops melanops* (Vieillot, 1819)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 07′12″S, 056°56′00″W. Recorded in a pond near Cerro Nazareno.

Identification. Identified by its black face, body grey with spotted flanks. Bill and frontal shield, green.

***Porphyrio martinicus* (Linnaeus, 1766)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′19″S, 056°50′53″W. Recorded in the reservoir.

Identification. Body purple; underparts olive. Bill red, with yellow tip. Legs yellowish.

Charadriidae

***Vanellus chilensis* (Molina, 1782)**
Figure 5E

New records. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′19″S, 056°55′37″W. Very common and widespread species in the study site. We recorded several individuals in open grounds and near the farmland.

Identification. Widely known. Identified by filamentous crest; breast and forehead black.

Recurvirostridae

***Himantopus mexicanus* (Linnaeus, 1758)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°10′ 44″S, 056°51′10″W. Recorded foraging in shallow water. Recorded in all seasons.

Identification. Legs very long, red. Neck, nape, head, and upperparts black. Underparts white

Scolopacidae

***Gallinago paraguaiae* (Vieillot, 1816)**

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°10′44″S, 056°51′10″W. Recorded in flooded-grasslands.

Identification. Neck, breast, and flanks barred. The center of the belly is white and unbarred.

***Tringa solitaria* (Wilson, 1813)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′21″S, 056°57′09″W. Recorded in flooded grassland during the winter near Cerro Pelón.

Identification. Dark upperparts, spotted white; eye ring, throat, and belly white.

Jacanidae

***Jacana jacana* (Linnaeus, 1766)**
Figure 5F, G

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′29″S, 056°55′20″W. We recorded adults and juveniles foraging in flooded grasslands.

Identification. Legs and toes, very long. Remiges yellow in flight.

Rostratulidae

***Nycticryphes semicollaris* (Vieillot, 1816)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 34″S, 056°55′23″W. Hard to detect. We recorded one individual after a rain, foraging in a short-grass wetland near the reservoir.

Identification. Bill long, decurved; golden V shape on back, and white stripe on crown and supercilium.

Laridae

***Phaetusa simplex* (Gmelin, 1789)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′ 07″S, 056°49′39″W. Recorded flying over the reservoir.

Identification. Bill large, yellow; back grey; primaries and crown black.

Columbidae

***Patagioenas picazuro* (Temminck, 1813)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′21″S, 056°50′09″W. Recorded during all seasons. Common in the study site.

Identification. Large pigeon. Head, nape, and breast gray-purplish. White band on wings.

***Patagioenas maculosa* (Temminck, 1813)**
Figure 5H

Observations. ARGENTINA • 10 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 22″S, 056°55′31″W. We recorded 10 individuals vocalizing or perching on the trees.

Identification. Differs from other large pigeons by its wing-coverts dark with white spots in each feather, giving spotted effect.

***Leptotila verreauxi* (Bonaparte, 1855)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°08′54″S, 056°51′55″W.

Identification. Resembles to *L. rufaxilla* (Richard & Bernard, 1792), but is distinguished by being greyer overall and not having a bluish forehead.

***Leptotila rufaxilla* (Richard & Bernard, 1792)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′22″S, 056°55′31″W. All individuals were recorded in the forest. We recorded a nest placed 2.5 m high in a tree the forest of Cerro Chico.

Identification. Differs from other pigeons in having an ample whitish to bluish forehead and olive-brown upperparts.

***Zenaida auriculata* (Des Murs, 1847)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′57″S, 056°54′27″W. Common in the study site. Recorded in every season.

Identification. Identified by its black spots on face and wings.

***Columbina picui* (Temminck, 1813)**

Observations. ARGENTINA • Multiple; Corrientes, La

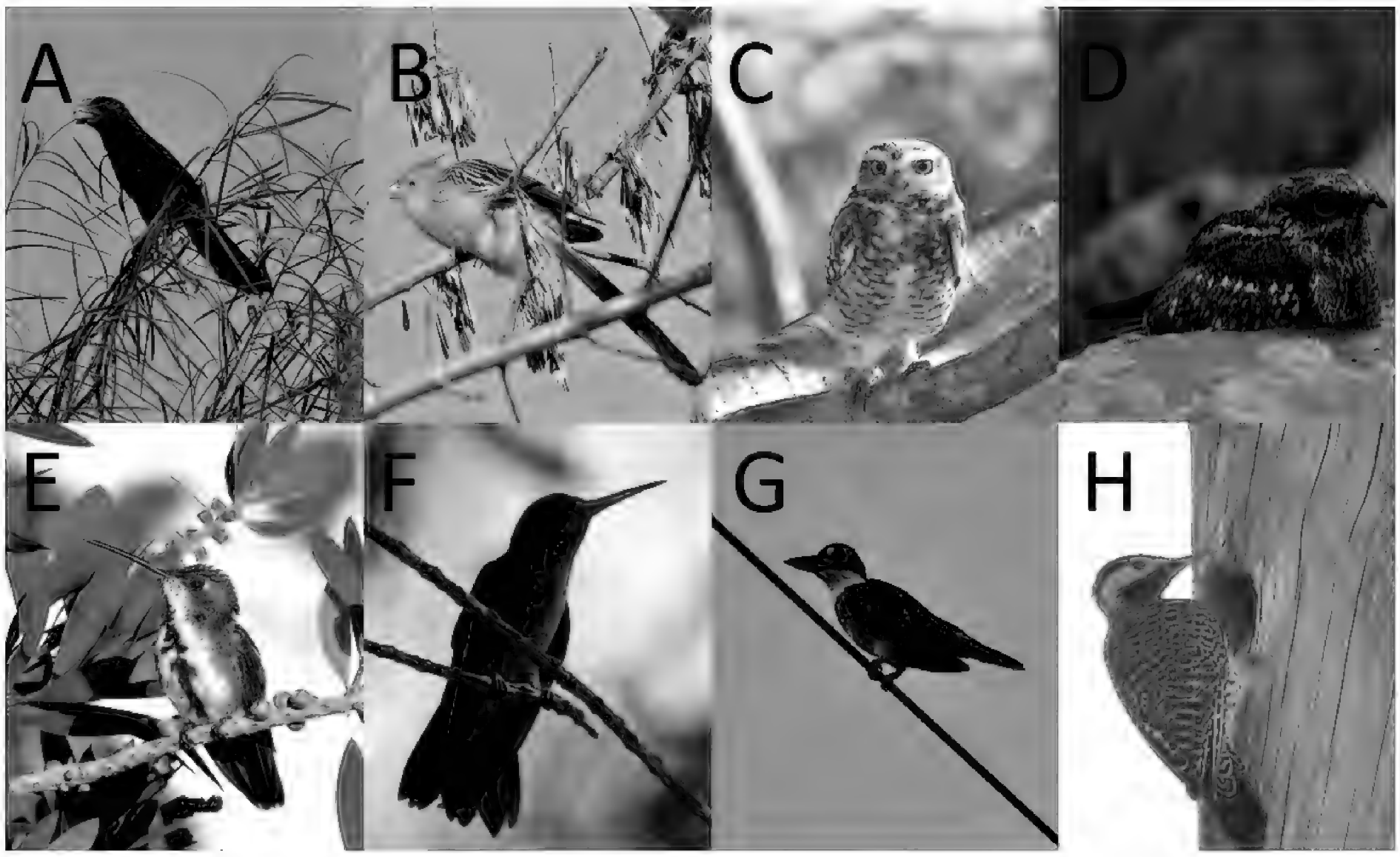

Figure 6. Bird species found during surveys. **A.** *Crotophaga ani*. **B.** *Guira guira*. **C.** *Athene cunicularia*. **D.** *Setopagis parvula* **E.** *Anthracothorax nigricollis*. **F.** *Hylocharis chrysura*. **G.** *Megaceryle torquata*. **H.** *Colaptes melanochloros*.

Cruz, Paraje Tres Cerros; 29°06′22″S, 056°55′35″W. Several individuals recorded near the farmhouse and in all study site.

Identification. Mostly grayish. Distinguished by the longitudinal white wingband and blackish stripe remiges.

Cuculidae

***Piaya cayana* (Linnaeus, 1766)**

Observations. ARGENTINA • 10 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′46″S, 056°55′26‴W. Recorded several times foraging in forest.

Identification. Distinguished by its graded very long tail. Upperparts rufous.

***Coccyzus melacoryphus* (Vieillot, 1817)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ “48″S, 056°55′14″W. Two individuals registered in the forests of Cerro Chico.

Identification. Mostly brown above and underparts yellowish, with a blackish mask.

***Crotophaga ani* (Linnaeus, 1758)**
Figure 6A

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 09′15″S, 056°51′00″W. Common in the area. Generally in flocks. Flying or perching on the shrubs.

Identification. Smaller than *C. major* (Gmelin, 1788); iris black. Different calls.

***Guira guira* (Gmelin, 1788)**
Figure 6B

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′03″S, 056°51′17″W. Recorded in groups of 5-6 individuals, in every season.

Identification. Crest rufous; back streaked with black and brown.

***Tapera naevia* (Linnaeus, 1766)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 56″S, 056°55′11″W. More often heard than seen. Common in grasslands of the study site.

Identification. Brown streaked with black; tail long. Eyebrow white. Crest reddish streaked with black.

Tytonidae

***Tyto alba* (Scopoli, 1769)**

Observations. ARGENTINA • 10 (sex unknown); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′25″S, 056°55′ 32″W. Recorded in several nights flying over the farmhouse.

Identification. Heart-shaped facial disk white. Underparts whitish with black spots.

Strigidae

***Megascops choliba* (Vieillot, 1817)**

Observations. ARGENTINA • 6 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°

09′30″S, 056°51′33″W. Common in the study site. Often heard.

Identification. Much smaller than *Bubo virginianus* (Gmelin, 1788). Facial disk with black rims. Underparts with black streaks.

***Bubo virginianus* (Gmelin, 1788)**

Observations. ARGENTINA • 1 (sex unknown); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′02″S, 056°51′44″W. Recorded perching high on a tree. Hidden.

Identification. Larger than other owls. Eyes large, yellow. Underparts finely barred.

***Athene cunicularia* (Molina, 1782)**
Figure 6C

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′30″S, 056°52′15″W. Generally seen in flocks. Recorded in every season in open grasslands.

Identification. Upperparts dark brown, streaked with white. Face, iris, and bill, yellow to orange.

Caprimulgidae

***Chordeiles nacunda* (Vieillot, 1817)**

Observations. ARGENTINA • 1 (sex unknown); Corrientes, La Cruz, Paraje Tres Cerros; 29°05′35″S, 056°56′47″W. Recorded on the ground in a rocky grassland.

Identification. Throat white and semi-collar buff.

***Nyctidromus albicollis* (Gmelin, 1789)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′33″S, 056°55′40″W. Recorded on the ground between rocks.

Identification. Wing coverts with black spots. Male has white wing bands across primaries.

***Setopagis parvula* (Gould, 1837)**
Figure 6D

New records. ARGENTINA • 1 (sex: unknown); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′34″S, 056°55′49″W. We recorded an individual during the morning, perched on a rock in Cerro Nazareno.

Identification. Little nightjar. It was identified by its conspicuous rufous collar on the sides and back of the neck. It has a thin, white stripe from the base of the bill through the cheeks and white throat patch.

***Hydropsalis torquata* (Gmelin, 1789)**

Observations. ARGENTINA • 1♀ 3♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′56″W. Identified in flight.

Identification. Tail very long, deeply forked.

Trochilidae

***Chlorostilbon lucidus* (D'Orbigny & Lafresnaye, 1838)**

Observations. ARGENTINA • 4♀ 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′34″S, 056°56′06″W. Common in the study site. One individual recorded eating insects in flight.

Identification. Male mainly green, with bluish breast. Female gray below.

***Hylocharis chrysura* (Shaw, 1812)**
Figure 6F

New records. ARGENTINA • 7 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′21″S, 056°56′05″W. Individuals of this species were recorded several times during the surveys in different macrohabitats. Common and widespread hummingbird in the study site.

Identification. It was identified by its iridescent golden-green plumage and bronzy tail, which differs from that of *C. lucidus*, which is blue.

***Anthracothorax nigricollis* (Vieillot, 1817)**
Figure 6E

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′23″S, 056°55′27″W. We recorded a female near the farmhouse in September 2018, feeding on the flowers of *Callistemon* (R.Br.) sp. along with individuals of *Chlorostilbon lucidus* (D'Orbigny & Lafresnaye, 1838).

Identification. Relatively rare in Corrientes. Slightly decurved bill. Purplish tail. Female with white underparts and a black central stripe. Easily distinguished from other hummingbird species on the study site.

Alcedinidae

***Megaceryle torquata* (Linnaeus, 1766)**
Figure 6G

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′29″S, 056°52′54″W. We recorded a female perching in March 2016 near wetlands.

Identification. Large kingfisher. The other two kingfishers in the area have bronzy green upperparts. Female has a bluish gray band on upper breast with narrow withish band separating this from rufous belly.

Picidae

***Melanerpes candidus (*Otto, 1796)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°08′58″S, 056°51′45″W. Recorded in groups in open habitats.

Identification. Differs from other woodpeckers by being white, except for wings, back and tail.

***Dryobates spilogaster* (Wagler, 1827)**
Figure 7C

New records. ARGENTINA • 3♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′49″S, 056°55′08″W. Recorded in forests, woodlands and near the farmhouse.

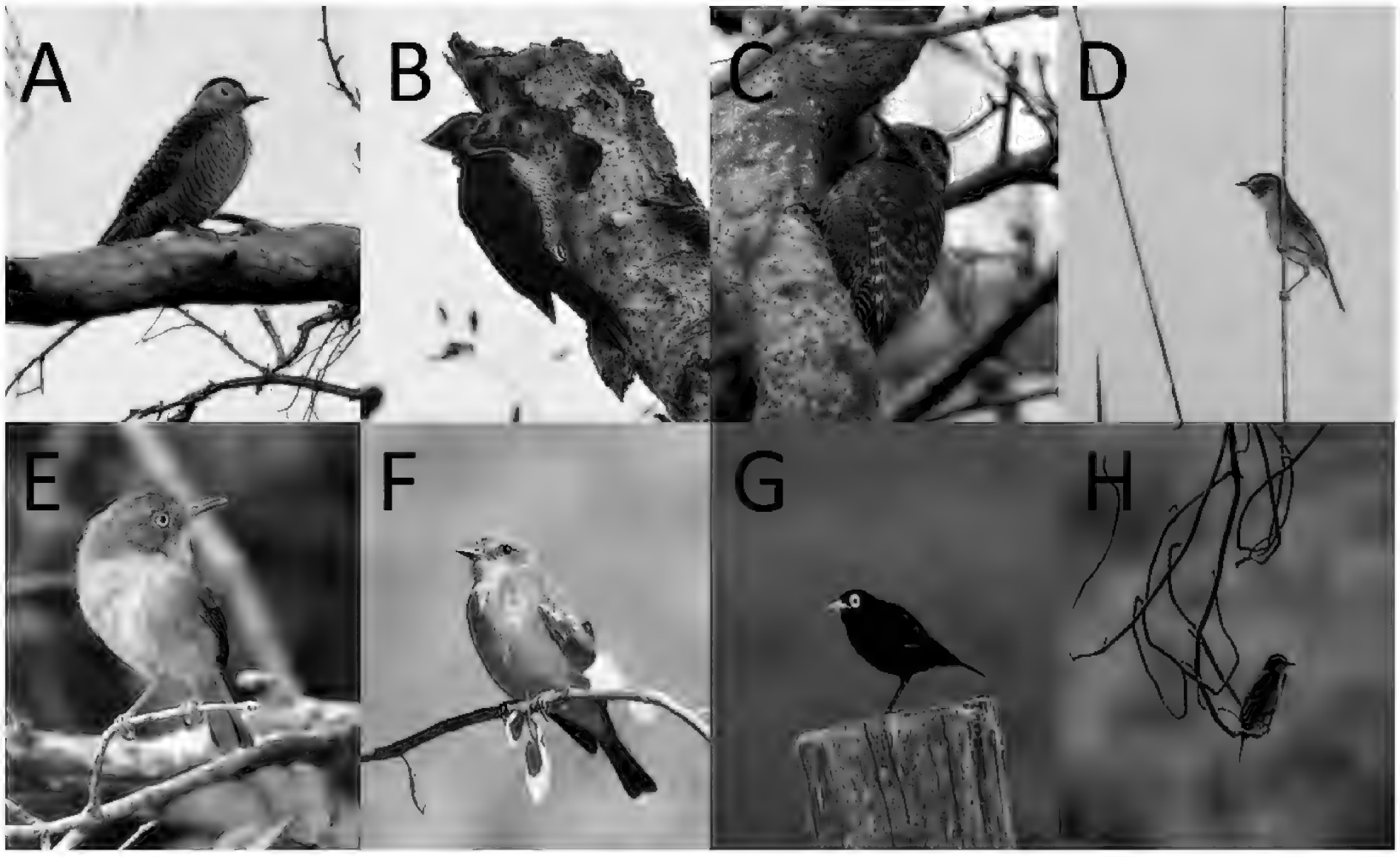

Figure 7. Bird species found during surveys. **A.** *Colaptes campestris*. **B.** *Dryocopus lineatus*. **C.** *Dryobates spilogaster*. **D.** *Polystictus pectoralis*. **E.** *Hemitriccus margaritaceiventer*. **F.** *Pyrocephalus rubinus*. **G.** *Hymenops perspicillatus*. **H.** *Satrapa icterophrys*.

Identification. Relatively small woodpecker. Above olive. Conspicuous supercilium and malar witish. Head dark with a red crown in males.

***Colaptes melanochloros* (Gmelin, 1788)**
Figure 6H

Observations. ARGENTINA • 4♀ 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We recorded a nest in a dead tree in November 2016, with three cheeks or nestlings.

Identification. Identified by its red semi-crest on nape and white face.

***Colaptes campestris* (Vieillot, 1818)**
Figure 7A

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°51′43″W. We observed several individuals foraging on the open grounds and grasslands and perching on tree branches.

Identification. Fairly terrestrial woodpecker. Identified by its both sides of the head, breast and neck, yellow. Crown black and malar red in male.

***Dryocopus lineatus* (Linnaeus, 1766)**
Figure 7B

Observations. ARGENTINA • 1♀ 2 unidentified; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056° 56′01″W. Three individuals observed between 2015 and 2017. One individual flew from the plantation towards the forest of Cerro Nazareno. The other two individuals were in the hygrophilous forest on the southern slope. A female was foraging in a dead tree.

Identification. Resembles sympatric *Campephilus* species, but it can be distinguished by the color pattern on its head and neck. Females do not have red malar.

Falconidae

***Caracara plancus* (Miller, 1777)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′ 13″S, 056°51′24″W. Common in the study site. Recorded in every season.

Identification. Mostly dark brown. Crown black; neck white. Cere and face orange.

***Milvago chimachima* (Vieillot, 1816)**

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′ 13″S, 056°51′24″W. Recorded perching on the top of tres.

Identification. Underparts, head, and neck whitish. Black streak behind eyes. Brown above.

***Milvago chimango* (Vieillot, 1816)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 09′13″S, 056°51′24″W. Common in the study site. Recorded in open habitats.

Identification. Mostly brown. Ocular stripe black. Underparts barred and belly whitish.

Falco sparverius **(Linnaeus, 1758)**

Observations. ARGENTINA • 2♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′52″S, 056°55′21″W. Recorded in open grasslands.

Identification. Back and tail rufous, with two vertical bands on each side of the head. Male with black spots on breast, Female with streaked underparts.

Falco femoralis **(Temminck, 1822)**

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′40″S, 056°55′49″W. Recorded perching on a power pole.

Identification. Upperparts blue-gray. Cere, eye ring, and feet yellow-orange. Head with black and white striped facial pattern. Throat and upper breast white; lower breast blackish.

Psittacidae

Myiopsitta monachus **(Boddaert, 1783)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′30″S, 056°55′28″W. Always seen in groups. It was the only parrot species recorded by us.

Identification. Upperparts green with blue remiges. Underparts light gray with green belly. Bill orange.

Thamnophilidae

Taraba major **(Vieillot, 1816)**

Observations. ARGENTINA • 1♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′42″S, 056°55′47″W. Recorded in the forest understory.

Identification. Iris red, bill large, and crest conspicuous. Male black above and white below; female brown-rufous above.

Thamnophilus caerulescens **(Vieillot, 1816)**

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′42″S, 056°55′47″W. Recorded in the edge of the forest understory.

Identification. Male with black crown and mostly gray body. Two white wing bars.

Furnariidae

Furnarius rufus **(Gmelin, 1788)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°07′16″S, 056°53′59″W. Common in the study site. Recorded in every season.

Identification. Upperparts brown, tail rufous, underparts light brown. Iris rufous.

Phacellodomus ruber **(Vieillot, 1817)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′18″S, 056°52′03″W. Recorded in pairs perching on shrubs.

Identification. Upperparts brown. Crown, wings, and tail rufous. Underparts whitish. Iris yellow.

Anumbius annumbi **(Vieillot, 1817)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′15″S, 056°52′32″W. Mainly arboreal bird. Recorded in various surveys.

Identification. Supercilium broad, white; throat white; tail gradually pointed.

Pseudoseisura lophotes **(Reichenbach, 1853)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°05′46″S, 056°56′44″W. Recorded running on the ground.

Identification. A large furnariid. Face dark brown face; crest conspicuous; throat rufous; iris yellow.

Schoeniophylax phryganophilus **(Vieillot, 1817)**

Observations. ARGENTINA • 6 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′06″S, 056°53′30″W. Recorded in pairs

Identification. Tail very long; crown and shoulders chestnut-brown; throat black and yellow; supercilium white.

Certhiaxis cinnamomeus **(Gmelin, 1788)**

Observations. ARGENTINA • 6 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′23″S, 056°50′44″W. Recorded on the edge of the reservoir in floating vegetation.

Identification. Upperparts and tail rufous; iris red; supercilium pale; throat white, with a yellow patch.

Synallaxis frontalis **(Pelzeln, 1859)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′24″S, 056°51′03″W. Common in the forest. More often heard than seen.

Identification. Underparts gray; crown rufous; back brown, with rufous wings; tail long, graduated.

Tyrannidae

Elaenia spectabilis **(Pelzeln, 1868)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′05″S, 056°51′56″W. Recorded in forest edges.

Identification. Larger than other *Elaenia* species. Belly yellowish; base of mandible yellow-orange.

Elaenia parvirostris **(Pelzeln, 1868)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′33″S, 056°55′40″W.

Identification. Smaller than *E. spectabilis*. Upperparts olive; bill short; eye ring and coronal patch white;

underparts gray.

***Camptostoma obsoletum* (Temminck, 1824)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′40″S, 056°56′00″W. More often heard than seen.

Identification. Upperparts olive; underparts yellowish; wing bars whitish; mandible orange.

***Suiriri suiriri* (Vieillot, 1818)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°56′32″W.

Identification. Overall grey; wings and tail darker; supraloral spot, small, white; bill black.

***Serpophaga subcristata* (Vieillot, 1817)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°55′13″W. Recorded in forests.

Identification. Supercilium and coronal stripe white coronal stripe; body grayish above, with belly and lower abdomen yellowish.

***Polystictus pectoralis* (Vieillot, 1758)**
Figure 7D

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′33″S, 056°51′51″W. A male observed in August and October 2014 in grasslands of Cerro Capará.

Identification. Rare in the study area. Crown grey to blackish, finely striped with white; breast and flanks cinnamon; bill and legs black. A small bird; similar in size to *Culicivora caudacuta* (Vieillot, 1818), but this species has a conspicuous, white supercilium.

***Euscarthmus meloryphus* (Wied, 1831)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′33″S, 056°55′39″W. Recorded in forest near Cerro Nazareno.

Identification. Very small; face, crown, and wing bars rufous; throat and underparts grayish.

***Hemitriccus margaritaceiventer* (D'Orbigny & Lafresnaye, 1837)**
Figure 7E

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We observed two individuals in the midstory of a forest patch near Cerro Chico.

Identification. Head large and gray; iris golden; underparts whitish.

***Myiophobus fasciatus* (Müller, 1776)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′32″S, 056°55′40″W. Recorded in forest edge.

Identification. Upperparts brown; two rufous wing bars; iris dark. Streaked underparts.

***Lathrotriccus euleri* (Cabanis, 1868)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°55′13″W.

Identification. Upperparts, head, and breast olive-brown; wing bars buff; belly grayish; maxilla black and mandible pinkish.

***Cnemotriccus fuscatus* (Cabanis, 1868)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°55′13″W. Recorded in the understory of Cerro Nazareno forest.

Identification. Differs from *Lathrotriccus euleri* in having two rufous wing bars and a long, brown supercilium.

***Pyrocephalus rubinus* (Boddaert, 1783)**
Figure 7F

Observations. ARGENTINA • Multiple (males, females and juvenile); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We found a nest with a chick in October 2017, placed 3 m above the ground on a tree near the farmhouse.

Identification. Top of head and underparts bright scarlet in adult males; immature males have delayed plumage maturation.

***Knipolegus cyanirostris* (Vieillot, 1818)**

Observations. ARGENTINA • 2♀ 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°05′50″S, 056°56′12″W. Recorded in forest edge and shrubby areas.

Identification. Overall black; females brown above, streaked below. Iris bright red; bill blue, with black tip.

***Hymenops perspicillatus* (Gmelin, 1789)**
Figure 7G

Observations. ARGENTINA • 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Two males observed perching in the grassland near water bodies.

Identification. Male black overall, with a yellowish, fleshy eye ring.

***Satrapa icterophrys* (Vieillot, 1818)**
Figure 7H

New records. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We saw three individuals perching near the ground in forest edges.

Identification. Supercilium conspicuous, bright yellow; crown and back gray.

***Xolmis irupero* (Vieillot, 1823)**
Figure 8A

New records. ARGENTINA • Multiple (no sexual

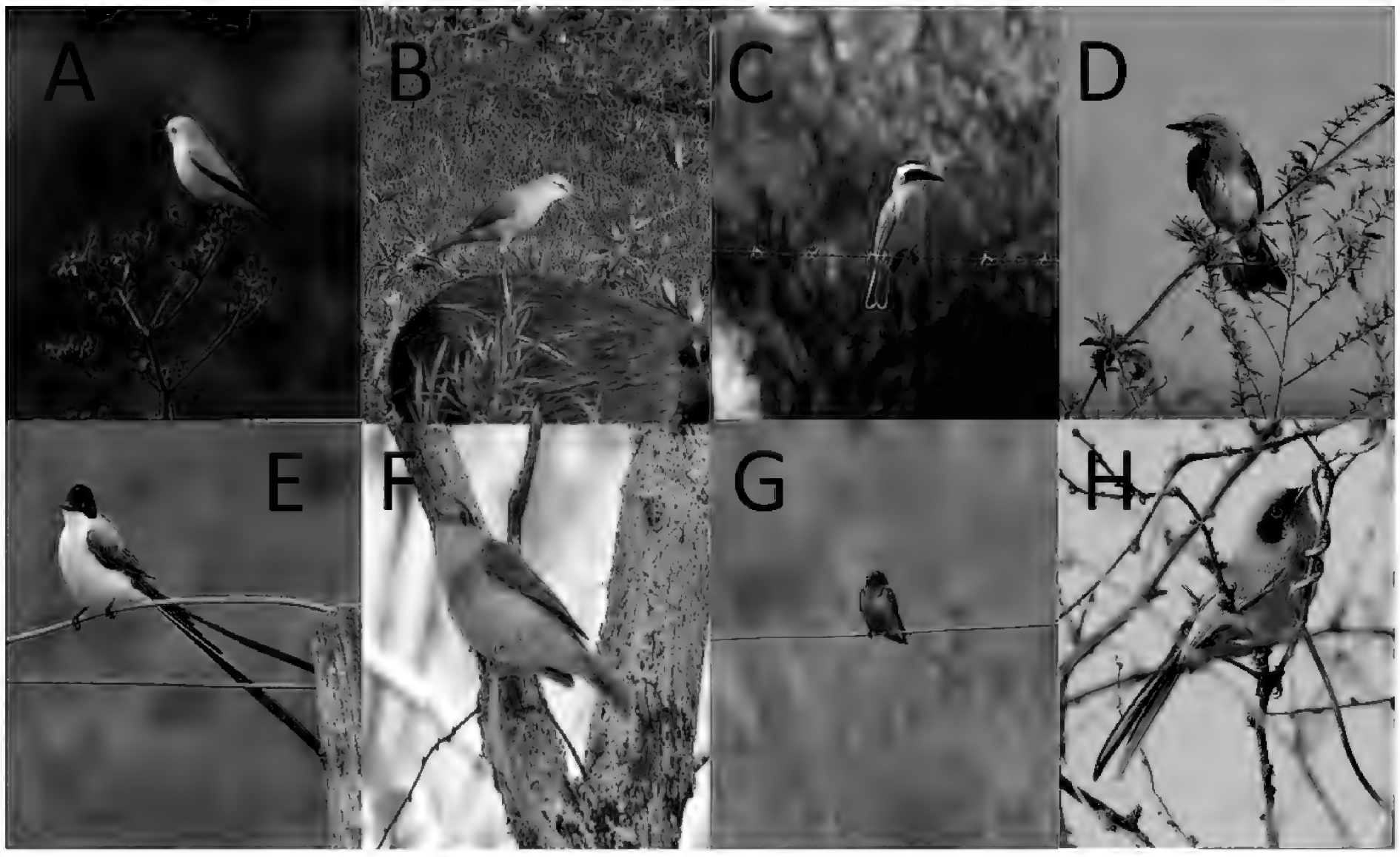

Figure 8. Bird species found during surveys. **A.** *Xolmis irupero*. **B.** *Machetornis rixosa*. **C.** *Pitangus sulphuratus*. **D.** *Tyrannus melancholicus*. **E.** *Tyrannus savana*. **F.** *Pachyramphus viridis*. **G.** *Hirundo rustica*. **H.** *Polioptila dumicola*.

dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 06° 03′06″N, 074°16′56″. Fairly common species in the study site. We recorded several individuals flying over the grasslands or perching on fences.

Identification. Plumage almost pure white, but primaries and tip of tail black.

***Machetornis rixosa* (Vieillot, 1819)**
Figure 8B

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We saw several individuals in open woodland, grasslands, and flooded savanna.

Identification. Terrestrial. Legs long; iris light red; crown concealed, orange.

***Pitangus sulphuratus* (Linnaeus, 1766)**
Figure 8C

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Observed in all surveys in different habitats.

Identification. Voice and bill size allow for separation from *Megarynchus pitangua* (Linnaeus, 1766)

***Myiodynastes maculatus* (Müller, 1776)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′36″S, 056°55′23″W. Recorded in summer in forest edges and semi-open habitats.

Identification. Underparts streaked with black; mask black; tail rufous; supercilium whitish.

***Megarynchus pitangua* (Linnaeus, 1766).**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′36″S, 056°55′23″W. Migratory in Argentina. Recorded in summer in various habitats types.

Identification. Differs from *Pitangus sulphuratus* by its exceptionally larger bill.

***Empidonomus varius* (Vieillot, 1818)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 32″S, 056°55′40″W. Recorded in summer in the canopy of forest.

Identification. Similar but smaller and slender than *Myiodynastes maculatus*.

***Tyrannus melancholicus* (Vieillot, 1819)**
Figure 8D

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. We observed several individuals foraging solitary or in pairs during summer season.

Identification. Head gray; crown concealed, orange; underparts yellow.

***Tyrannus savana* (Vieillot, 1808)**
Figure 8E

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′

27″S, 056°55′54″W. This species was observed during the summer season since the beginning of the study. Generally highly visible. We saw several individuals perching on fences or catching insects in flight.

Identification. Underparts white and upperparts gray; head and tail black; tail extremely long and forked.

***Myiarchus swainsoni* (Cabanis & Heine, 1859)**

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°51′36″W. Recorded in the forest of Cerro Nazareno and Cerro Capará.

Identification. Mandible brown; wing coverts edged with white.

***Myiarchus tyrannulus* (Müller, 1776)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′32″S, 056°55′39″W. Recorded mostly in midcanopy levels in forest.

Identification. Differs from *M. swainsoni* by its bushy crest and rufous-edged primaries.

Cotingidae

***Phytotoma rutila* (Vieillot, 1818)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′38″S, 056°54′55″W. One individual recorded in shrubby understory.

Identification. Forehead, throat, and underparts rufous; upperparts gray; crest short.

Tytiridae

***Pachyramphus viridis* (Vieillot, 1816)**

Figure 8F

Observations. ARGENTINA • 3♀ 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Five individuals observed foraging on the top of the trees in forest patches.

Identification. Female similar to *Cyclarhis gujanensis* (Gmelin, 1789), but the crown is olive and coverts are rufous.

***Pachyramphus polychopterus* (Vieillot, 1818)**

Observations. ARGENTINA • 1♀ 3♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°55′26″W. Recorded foraging in the forest canopy.

Identification. In males, crown and upperparts black, with white scapulars; in females, crown and upperparts brownish.

Vireonidae

***Cyclarhis gujanensis* (Gmelin, 1789)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′45″S, 056°55′26″W. Recorded foraging in the canopy forest.

Identification. Head gray, with a rufous eyebrow; throat and chest yellowish; tail olive-green.

***Vireo chivi* (Vieillot, 1817)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°08′47″S, 056°52′28″W. Recorded in forests. More often heard than seen.

Identification. Crown gray; upperparts and tail olive; supercilium white; underparts whitish.

Hirundinidae

***Progne tapera* (Linnaeus, 1766)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°08′48″S, 056°51′48″W. Summer visitant. Recorded in large flocks. Often perching on electricity wires. Recorded every year in spring and summer, between September and March.

Identification. Similar to *P. chalybea* (Gmelin, 1789), but with a contrasting blackish throat and breast, and lighter brown underparts.

***Progne chalybea* (Gmelin, 1789)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′23″S, 056°50′41″W. Summer visitant. Recorded in open grasslands and perching on fences. Recorded every year in spring and summer, between September and March.

Identification. Similar to *P. tapera*, but it has a shiny, blue back.

***Tachycineta leucorrhoa* (Vieillot, 1817)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′04″S, 056°51′42″W.

Identification. Rump, and loral line white.

***Riparia riparia* (Linnaeus, 1758)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°50′47″W. Recorded in open waters in the serevoir.

Identification. Upperparts grayish brown, with darker remiges; breast brown; throat and underparts white.

***Hirundo rustica* (Linnaeus, 1758)**

Figure 8G

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Several individuals recorded during summer season, catching insects on the air.

Identification. Tail long and deeply forked; throat rufous.

Troglodytidae

Troglodytes aedon (Vieillot, 1809)

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°08′59″S, 056°52′07″W. Very common in the study site. Occurs in various habitats.

Identification. Small. Upperparts brown; underparts light gray; remiges barred with black.

Polioptilidae

***Polioptila dumicola* (Vieillot, 1817)**
Figure 8H

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Several individuals foraging in tree canopy. In winter often in mixed flocks.

Identification. In males, mask and tail black; females lack a mask.

Donacobiidae

***Donacobius atricapilla* (Linnaeus, 1766)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′24″S, 056°50′44″W. Recorded perching on marsh vegetation in the reservoir.

Identification. Head, bill, and tail black; iris yellow; each side of throat with yellowish patch; underparts yellowish; back dark brown.

Turdidae

***Turdus amaurochalinus* (Cabanis 1850)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′25″S, 056°51′24″W. Very common in the study site. Recorded at all seasons.

Identification. Bill yellow (dark in females); streaked throat; lower belly whitish; back olive-brownish.

***Turdus leucomelas* (Vieillot, 1818)**
Figure 9A

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Common in forest islands. Several individuals foraging on ground.

Identification. Differs from other trushes in having uniformly brown plumage, and by its vocalization.

***Turdus rufiventris* (Vieillot, 1818)**
Figure 9B

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Common in the study site. Recorded in forests and pastures.

Identification. Rufous underparts distinctive.

Mimidae

***Mimus saturninus* (Lichtenstein, 1823)**
Figure 9C

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Common in the study site in non-forest habitats. Generally foraging on ground.

Identification. Supercilium conspicuous, broad, and white. Larger than *M. triurus*.

***Mimus triurus* (Vieillot, 1818)**

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°09′24″S, 056°54′50″W. Winter visitor. Recorded every year during May to August.

Identification. Rump rufous; with a conspicuous, white wing band.

Motacillidae

***Anthus lutescens* (Pucherna, 1855)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′55″S, 056°55′15″W. Recorded in short grasslands.

Identification. Very small. Underparts yellowish; breast streaked; brown upperparts streaked with black.

***Anthus hellmayri* (Hartert, 1909)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′55″S, 056°55′15″W. Recorded in short rocky grasslands.

Identification. Slightly larger than *A. lutescens*. Upperparts brownish grey; underparts whitish, streaked dusky on breast and flanks.

Thraupidae

***Paroaria coronata* (Miller, 1776)**
Figure 9E

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Observed in groups. In general near the farmhouse, foraging in open grounds.

Identification. Crest erect; hood bright red; underparts white.

***Thlypopsis sordida* (D'Orbigny & Lafresnaye, 1837)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′50″S, 056°55′07″W. Recorded in the forest of Cerro Chico.

Identification. Head orange, grey above; underparts whitish.

***Tachyphonus rufus* (Boddaert, 1783)**

Observations. ARGENTINA • 1 ♀; Corrientes, La

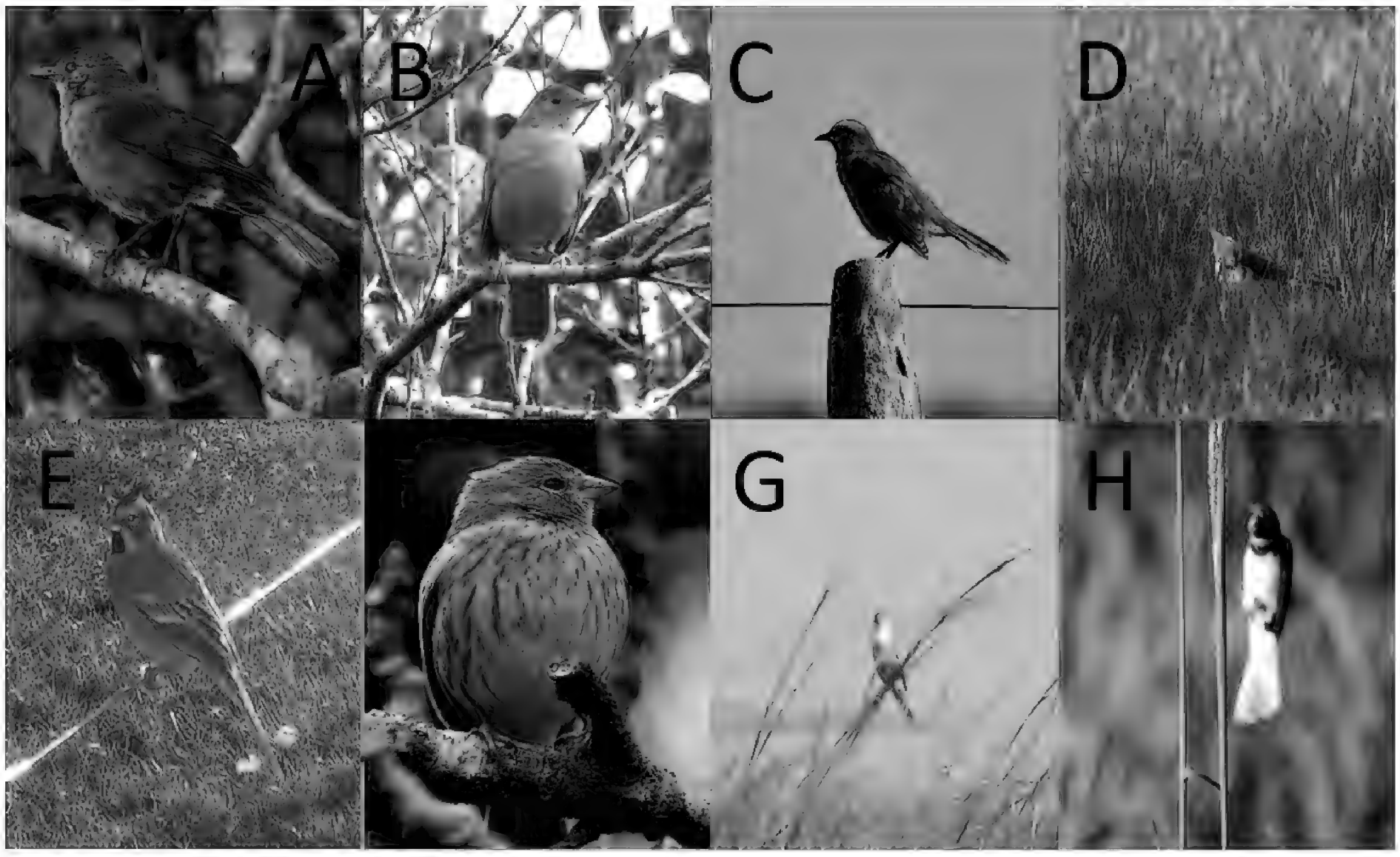

Figure 9. Bird species found during surveys. **A.** *Turdus leucomelas*. **B.** *Turdus rufiventris*. **C.** *Mimus saturninus*. **D.** *Paroaria coronata*. **E.** *Gubernatrix cristata*. **F.** *Sicalis flaveola*. **G.** *Sporophila palustris* **H.** *Sporophila caerulescens*.

Cruz, Paraje Tres Cerros; 29°05′47″S, 056°56′17″W.

Identification. Males entirely glossy black, except for white shoulders; lower mandible whitish.

***Pipraeidea bonariensis* (Gmelin, 1789)**

Observations. ARGENTINA • 3♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′25″S, 056°55′34″W. Recorded near farmhouse and in forest edges.

Identification. Head and throat sky-blue; lores black; wings blue; underparts yellow. Females dull-colored.

***Thraupis sayaca* (Linnaeus, 1766)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′46″S, 056°55′24″W. Very common in the study site, recorded in every season.

Identification. Upperparts sky-blue; head and underparts bluish gray.

***Donacospiza albifrons* (Vieillot, 1817)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 07′21″S, 056°56′31″W. Recorded perching and foraging in grasslands.

Identification. Tail long; supercilium whitish; back brown, streaked black.

***Gubernatrix cristata* (Vieillot, 1817)**

Figure 9D

Observations. ARGENTINA • 1 ♀ 2 ♂; Corrientes, La Cruz, Paraje Tres Cerros. Very rare. Highly territorial species. One male and two females recorded in PTC in 2014 foraging in savannas (the location of the record is not detailed because it is a species that is highly persecuted by poachers).

Identification. Males with a conspicuous crest and throat; overall greenish yellow; females similar in pattern to male but differing in color, with gray cheeks and breast.

***Microspingus melanoleucus* (D'Orbigny & Lafresnaye, 1837)**

Observations. ARGENTINA • 1 ♀1 ♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′38″S, 056°56′02″W. Recorded in shrub-forest and forests.

Identification. Males with black head and white underparts; females duller than male, with less black.

***Sicalis flaveola* (Linnaeus, 1766)**

Figure 9E

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056° 55′54″W. Often observed in pairs, perching in trees.

Identification. Forehead orange; females less colorful, with reduced orange on crown.

***Sicalis luteola* (Sparrman, 1789)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′48″S, 056° 55′16″W. Recorded several times foraging on grasslands.

Identification. In males, upperparts brownish, with dusky streaks; underparts mostly yellow, and eyebrow yellow. Females paler and lacks yellow on head.

Emberizoides herbicola **(Vieillot, 1817)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 09′41″S, 056°51′43″W. Recorded in grasslands often on exposed perch.

Identification. Upperparts greenish, streaked blackish; head and underparts grayish; bill thick, yellow; tail long.

Emberizoides ypiranganus **(Ihering, 1907)**

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 09′24″S, 056°52′23″W. We recorded an individual perching in wet grasslands near Cerro Capará in February 2013.

Identification. Relatively rare in the study area. Similar to the most widespread *E. herbicola*, but significantly smaller, with a grayer face and whiter throat, orange mandible, and blackish culmen.

Embernagra platensis **(Gmelin, 1789)**

Observations. ARGENTINA • 2 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 05′44″S, 056°57′05″W. Recorded in grasslands and also perching on fence posts.

Identification. Head gray, with darker face; upperparts greenish; bill orange.

Volatinia jacarina **(Linnaeus, 1766)**

Observations. ARGENTINA • 1♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′09″S, 056°56′10″W.

Identification. Tiny. Males mostly black with dark-blue iridescence; females brown, with streaked breast.

Sporophila palustris **(Barrows, 1883)**
Figure 9F

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′32″S, 056°51′57″W. A male observed in wet grasslands near Cerro Capará in February 2013.

Identification. Relatively rare worldwide. Associated with marsh vegetation. Male with plumbeous back and ample white throat; forehead and back gray.

Sporophila cinnamomea **(Lafresnaye, 1839)**
Figure 9G

Observations. ARGENTINA • 1♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′41″S, 056°51′43″W. Rare. A male observed in wet grasslands near Cerro Capará in February 2013.

Identification. Associated with marsh vegetation and grasslands. Males with distinctive, gray cap and rufous-red underparts. Similar *S. hypochroma* (Todd, 1915) has a grayish upperback.

Sporophila caerulescens **(Vieillot, 1823)**
Figure 9H

New records. ARGENTINA • 3♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′35″S, 056°51′57″W. We saw males and females in pairs, foraging on grass seeds, usually perching on vegetation.

Identification. Small. The throat superficially resembles that of *S. lineola* (Linnaeus, 1758) but bill yellowish in *S. caerulescens*. Males with gray upperparts, a dark throat bordered by a black and white band across the breast; crown and face gray.

Sporophila collaris **(Boddaert, 1783)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′36″S, 056°52′01″W.

Identification. Bill thick; tail relatively long; males with black head and broad, white neck-collar; female duller than male.

Coryphospingus cucullatus **(Müller, 1776)**

Observations. ARGENTINA • 4♀ 3♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′38″S, 056°55′18″W.

Identification. Eye ring white. Male with red-brown upperparts and red underparts; female brown above.

Saltator coerulescens **(Vieillot, 1817)**

Observations. ARGENTINA • 5 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 33″S, 056°55′38″W. Recorded in forest and forest edges.

Identification. Mostly gray; supercilium short, pale; malar black.

Saltator similis **(d'Orbigny & Lafresnaye, 1837)**

Observations. ARGENTINA • 4 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′17″S, 056°55′47″W. Recorded in forest edges.

Identification. Supercilium white; upperparts greenish. *S. coerulecens* is gray above and has a shorter supercilium.

Saltator aurantiirostris **(Vieillot, 1817)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′52″S, 056°55′05″W. Recorded in edge forest of Cerro Chico.

Identification. Mostly gray, with black head, white throat, and a long white supercilium behind eye; bill orange.

Emberizidae

Ammodramus humeralis **(Bosc, 1792)**
Figure 10A

Observations. ARGENTINA • 10 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 55″S, 056°55′14″W. Often singing from a visible perch. It was seen in grasslands and rural areas.

Identification. Eyebrow whitish and yellow; shoulders bright yellow; upperparts brownish and underparts grayish.

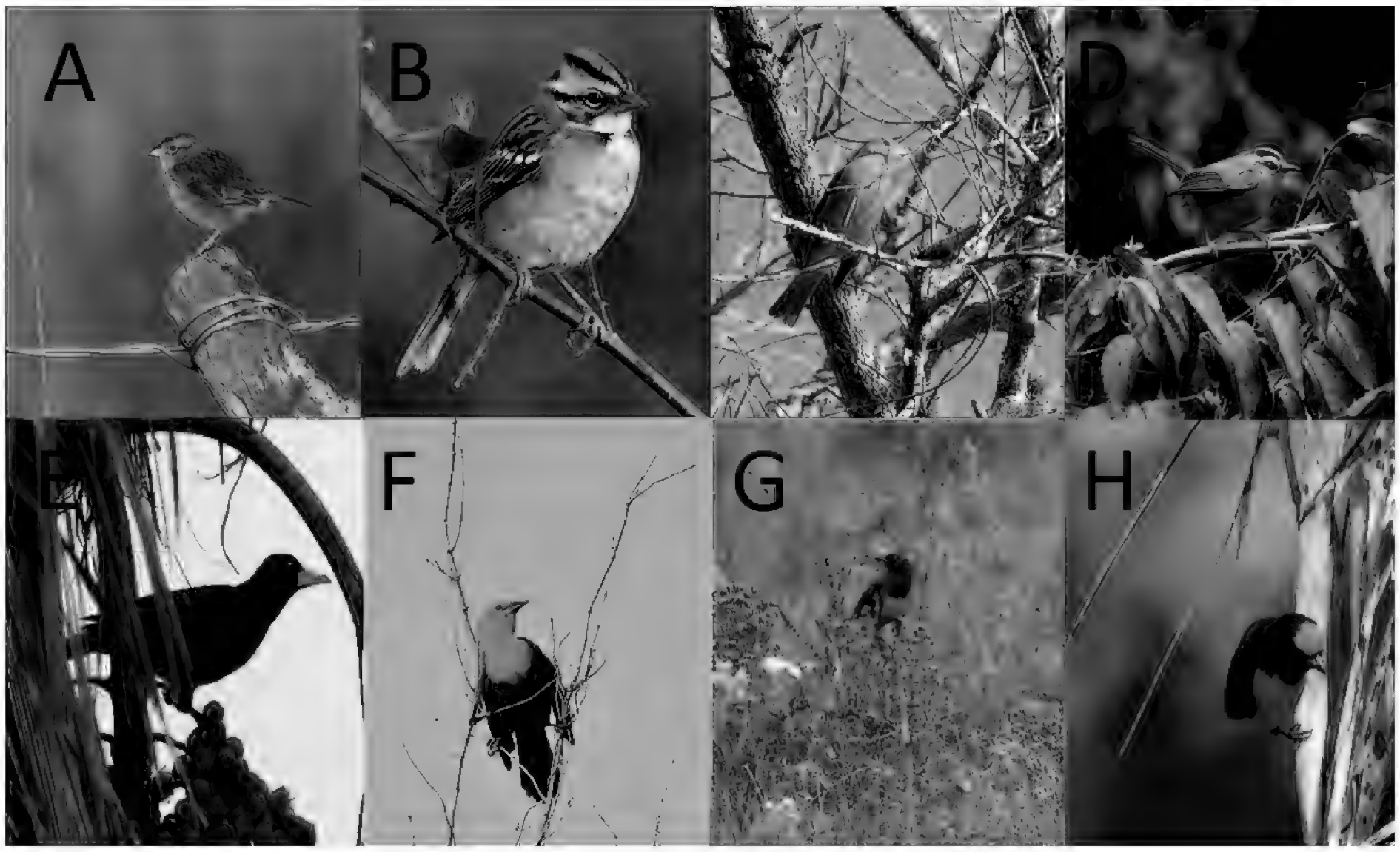

Figure 10. Bird species found during surveys. **A.** *Ammodramus humeralis*. **B.** *Zonotrichia capensis*. **C.** *Piranga flava*. **D.** *Basileuterus culicivorus*. **E.** *Psarocolius decumanus*. **F.** *Amblyramphus holosericeus*. **G.** *Pseudoleistes virescens*. **H.** *Euphonia chlorotica*.

***Zonotrichia capensis* (Müller, 1776)**

Figure 10B

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′54″W. Several individuals observed during all surveys. Common and widespread in the study site.

Identification. Head gray, with black stripes; semi-crest, and cheek gray; hindneck cinnamon.

Cardinalidae

***Piranga flava* (Vieillot, 1822)**

Figure 10C

New records. ARGENTINA • 2♀2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′29″S, 056°55′31″W. We recorded this species foraging in pairs, mostly high in trees, and sometimes in low shrubs.

Identification. Males red to red-orange, with gray lores and dark bill; females yellowish-olive above and orange-yellow below.

***Cyanoloxia brissonii* (Lichtenstein, 1823)**

Observations. ARGENTINA • 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′32″S, 056°55′25″W.

Identification. Males blue overall, with a sky-blue supercilium; bill thick, blackish; base of mandible whitish.

Parulidae

***Geothlypis aequinoctialis* (Gmelin, 1789)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°08′24″S, 056°52′15″W. Recorded in a flooded grassland with scattered shrubs near the reservoir.

Identification. Males greenish-olive above, with a black mask and gray forehead.

***Setophaga pitiayumi* (Vieillot, 1817)**

Observations. ARGENTINA • 3♀ 2♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′47″S, 056°55′24″W.

Identification. Upperparts bluish; underparts yellow; two white wing bands; orange on breast. Female duller than male.

***Myiothlypis leucoblephara* (Vieillot, 1817)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′33″S, 056°55′37″W. Common in the study site. More often heard than seen.

Identification. Differs from *Basileuterus culicivorus* (Swainson, 1838) in having a white eye ring and blackish eye stripe.

***Basileuterus culicivorus* (Swainson, 1838)**

Figure 10D

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′35″S, 056°56′02″W. Several adults foraging in the understory of the forests, during all seasons.

Identification. Crown with two broad, lateral, black stripes; supercilium white.

Icteridae

***Psarocolius decumanus* (Pallas, 1769)**
Figure 10E

Observations. ARGENTINA • 1 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29° 06′22″S, 056°55′28″W. Recorded only one time in September 2017. We saw a single individual perched on a *Syagrus romanzoffiana* palm. This record extends the distribution in Corrientes Province further south relative to records published by Krauczuk et al. 2017. However, there is a record of a pair even further south in Yapeyú in 2011 (Bodrati pers. comm.).

Identification. Mainly black; bill large, ivory; tail conspicuous, yellow. Significantly larger than *Cacicus solitarius* and *C. haemorrhous*.

***Icterus pyrrhopterus* (Vieillot, 1819)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′21″S, 056° 51′35″W. Registered in every season in various habitats.

Identification. Mostly black; bill thin; shoulders with rufous patch.

***Gnorimopsar chopi* (Vieillot, 1819)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′50″S, 056°54′54″W. Recorded in grasslands. Often heard.

Identification. Overall black. Differs from other icterids by its curved bill, which is grooved on the lower mandible.

***Amblyramphus holosericeus* (Scopoli, 1786)**
Figure 10F

Observations. ARGENTINA • 3 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′24″S, 056°53′21″W. We observed three individuals perching around the wetlands.

Identification. Head and breast bright orange-red.

***Agelasticus cyanopus* (Vieillot, 1819)**

Observations. ARGENTINA • 1♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°50′29″W. Recorded in marsh vegetation in reservoir.

Identification. Bill long, pointed. Males entirely black; females yellowish below, streaked black on flanks, and with a dark mask and a slight supercilium.

***Chrysomus ruficapillus* (Vieillot, 1819)**

Observations. ARGENTINA • 2♀ 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′20″S, 056°50′29″W. Recorded in marsh vegetation in reservoir.

Identification. Male has a rufous crown and bib.

***Pseudoleistes virescens* (Vieillot, 1819)**
Figure 10G

Observations. ARGENTINA • Multiple (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°07′04″S, 056°55′51″W. Observed in groups perching near marshes and wet grasslands and pastures.

Identification. Differs from *P. guirahuro* (Vieillot, 1819) in having brown rump and a less colorful appearance.

***Agelaioides badius* (Vieillot, 1819)**

Observations. ARGENTINA • 6 (no sexual dimorphism); Corrientes, La Cruz, Paraje Tres Cerros; 29°06′ 36″S, 056°55′02″W. Recorded in groups. Relatively common in open human-modified habitats.

Identification. A brownish icterid; wings rufous; lores and tail blackish.

***Molothrus rufoaxillaris* (Cassin, 1866)**

Observations. ARGENTINA • Multiple; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′25″S, 056°55′32″W. Recorded in groups in open areas.

Identification. Similar to male *M. bonariensis* (Gmelin, 1789) but with a shorter bill and less violet gloss, and not sexually dimorphic.

***Molothrus bonariensis* (Gmelin, 1789)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′19″S, 056° 55′27″W. Common in the study site. Recorded in various habitats.

Identification. Differs from *M. rufoaxillaris* in having a strong violet gloss.

***Sturnella superciliaris* (Bonaparte, 1851)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′38″S, 056° 51′14″W. Recorded in grasslands near rural aeas.

Identification. Supercilium white; bill relatively short; upperparts mostly black; breast red.

Fringillidae

***Spinus magellanicus* (Vieillot, 1805)**

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′26″S, 056° 51′46″W. Recorded in groups of males and females in grasslands with scattered trees.

Identification. Small. Head black, back streaked with dark yellow-olive; wings black, with a yellow band.

***Euphonia chlorotica* (Linnaeus, 1766)**
Figure 10H

Observations. ARGENTINA • Multiple ♂ and ♀; Corrientes, La Cruz, Paraje Tres Cerros; 29°09′05″S, 056°52′ 05″W. More often heard than seen. Usually found in edge forest foraging high in tall trees.

Identification. Small. Males with yellow forehead; underparts bright yellow, and the rest bright blue. Females mainly olive and grayish.

***Euphonia cyanocephala* (Vieillot, 1818)**

Observations. ARGENTINA • 1♂; Corrientes, La Cruz, Paraje Tres Cerros; 29°06′27″S, 056°55′25″W. We recorded one individual near the farmhouse, perching high on a tree.

Identification. Males with blue head and nape; tail, throat, and wings black.

Discussion

Our data increase the number of known bird species in forests and grasslands at Paraje Tres Cerros to 188 (Fandiño et al. (2017) had only reported 107 species). This richness represents 36% of the known avifauna in Corrientes province (Capllonch et al. 2005; Chatellenaz et al. 2010), which shows the importance of the Espinal region for regional biodiversity.

As expected, in contrast to Fandiño et al.'s (2017) study that did not survey wetlands, we recorded orders associated with water (i.e. Ciconiiformes, Pelecaniformes, Anseriformes, Suliformes). Among the species we observed in wetlands is *Amblyramphus holosericeus*, which is listed nationally Vulnerable (MAyDS and AA, 2017).

An important find was the presence of several grassland-specialist species which are globally threatened, such as *Sporophila palustris*; this species is one of the most threatened seedeaters and a summer visitor, which nests in grasslands and marshes of northeastern Argentina (Silva 1999; Areta 2008). Another threatened and sympatric seedeater is *S. cinnamomea*. Seedeaters are specialists of these environments and indicators of sites having high conservation interest (Devenish et al. 2009). Another species of conservation interest that breeds in the area is *Gubernatrix cristata*. It is typical of the Espinal Province (Reales et al. 2019). Its populations are declining due to the extraction of individuals from the wild and to habitat loss (BirdLife International 2018). The continuous degradation of natural grasslands in the area due to anthropogenic activities and the absence of natural reserves to protect these environments (Di Giacomo et al. 2011) threatens the viability of bird populations, especially of species with restricted ranges and small population sizes. We also found populations of Near Threatened species. One of the most abundant is *Rhea americana*, which has undergone declines in Argentina mainly due to habitat loss, hunting, and egg collecting (Martella and Navarro 2006). *Rhea americana* inhabits grasslands and savannas, but has adapted to agricultural and livestock areas, although in low densities (Giordano et al. 2010).

There are two threatened species, known from nearby areas that were not found by us in the study area. These include *Buteogallus coronatus* (Vieillot, 1817) and *Alectrurus risora* (Vieillot, 1824) (Fandiño et al. 2017). Although not found there by us, these species could potentially use the resources available in the habitats of Paraje Tres Cerros. Our new records of threatened species are important contributions to the knowledge of these species' distributions, and such data has potential use for proposing Paraje Tres Cerros as an important bird area (BirdLife International 2014).

Cattle ranching is the main activity in Paraje Tres Cerros and its surroundings. In some farms, the high grazing pressure hinders the growth of natural grasslands, which are necessary for the existence of several threatened species. Indeed, there were species found in protected sites without the presence of livestock. For example, *Culicivora caudacuta* (Vieillot, 1818) inhabits tall grasslands in the lowlands that are rarely disturbed and *Xanthopsar flavus* (Gmelin, 1788) and *Xolmis dominica* (Vieillot, 1823) occurs in marshes and wet natural grasslands. Although these species can use short grasslands for feeding, they need tall grasslands for nesting and shelter.

The greatest number of non-shared species and species richness among hills was recorded at Cerro Nazareno. This could be partly because it was where the greatest sampling effort was made. However, the presence of an important continuous primary hygrophilous forest on the southern slope, with floristic elements of the Atlantic Forest (Parodi 1943), provides resources for many forest-dependent species, for example, *Accipiter striatus* (Vieillot, 1807), *Dryocopus lineatus*, and migrants like *Coccyzus melacoryphus* (Vieillot, 1817), a summer visitant that feeds on seeds and insects (Beltzer and Quiroga 2008). Although we made no nocturnal surveys, we recorded three species of nightjars at Cerro Nazareno. It has been suggested that these species are relatively abundant in rocky outcrops because they may feed on the numerous insects that fly at dusk among the rocks (Fredericksen et al. 2003). Additional studies on the abundance and diversity of insects in rocky outcrops and nocturnal surveys are needed to corroborate this.

Despite the fact that the surroundings of the rocky outcrops include anthropogenic habitats, the heterogeneity of the landscapes and the structural complexity of the different environments favors the existence of a great number of both generalists and specialists species. It has been suggested that a greater complexity of habitat structure may provide a wider variety of resources for birds than less complex habitats (Codesido et al. 2013; Brandolin and Blendinger 2016). The forests that cover the slopes of the hills also play an important role for birds, providing food and shelter for both resident and migrant species. The difficulty of access to these forests impedes logging, which favors their conservation.

The small size of outcrops studied here does not act as a barrier to the free movement of birds, but the ecological relationships between birds and rocky outcrops may be acting at another level. Our future goal is to determine the specific role of rocky outcrops for birds

(nesting, foraging, and shelter). We found several species nesting among the rocks. Interestingly, we recorded the three species of vulture nesting in the hills: *Cathartes aura*, *C. burrovianus*, and *Coragyps atratus*. We also found species, such as *Colaptes campestris*, *Leptotila rufaxilla* (Richard & Bernard, 1792), and *Elaenia spectabilis* (Pelzeln, 1868) nesting among the hill vegetation.

We consider that Cerro Capará and its grassland matrix offers conditions to support a greater number of species than we report here; hence, future studies with increased sampling effort should focus on this habitat. As on Cerro Nazareno, the south-facing forest of Cerro Capará may offer food resources to frugivorous bird species. Despite its small area, the presence of a rocky environment in a grassland-dominated landscape may increase the regional avifaunal diversity by providing different resources for foraging, roosting, nesting, or shelter.

In conclusion, our study confirms and highlights further the conservation value of Paraje Tres Cerros, both because of the importance and uniqueness of the rocky outcrops and because of the grassland matrix, one of the most threatened environments in the world. .

Comparison with the rocky outcrop avifauna of southern Brazil and Uruguay. Several bird studies have been conducted on rocky outcrops in Brazil. These habitats, known as the High-Altitude Complex, support a high biodiversity and several endemic species (Vasconcelos 2008; Freitas et al. 2012). In general, these studies reported a high species richness. For example, Vasconcelos and Neto (2009), recorded 209 species in Serra da Mantiqueira, and Nunes et al. (2013) recorded 413 species in Serras de Maracaju. Endemic bird species include *Scytalopus petrophilus* (Whitney, Vasconcelos, Silveira & Pacheco, 2010) in Espinhaco and Serra da Mantiqueira, and *Neopelma chrysolophum* (Pinto, 1944) in forests of Serra do Mar, among many others. The greater species richness and the presence of endemic birds in rocky outcrops in Brazil compared to the rocky outcrops in Corrientes is likely explained by the area covered by the rocky outcrops. In southeastern and northeastern Brazil, these geological features can be as large as 500 to >1500 km^2, and the dominant vegetation occurs at 900–1500 m a.s.l., depending on the type of vegetation. Thus, conditions and habitat complexity offer many more resources and a larger area to support endemic species than the relatively small outcrops in Corrientes. However, as in Paraje Tres Cerros, the largest proportion of bird species in these rocky habitats is composed of non-endemic wide-ranging species (Vasconcelos and Rodrigues 2010). We did not find any studies on the avifauna of rocky outcrops in Uruguay, nor any records of endemic species. However, we highlight the presence of *Knipolegus lophotes* (Boie, 1828), a small tyrant flycatcher which is also found in Brazil and occurs in rocky grasslands and savannas with scattered trees in Uruguay (Arballo 1990).

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Authors' Contributions

JMF, LT, BF and RC designed the study; JMF, LT, BF collected the data and identified the species; JMF built the map; JMF, LT, BF, RC, AH wrote the manuscript. Photos by JMF and BF.

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